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NO. 165

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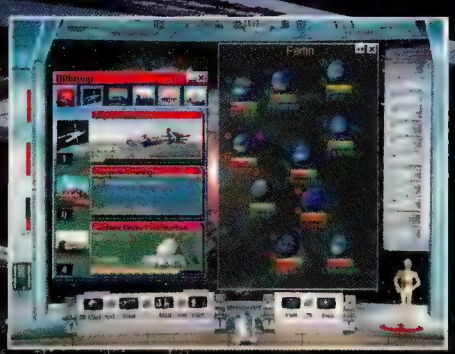

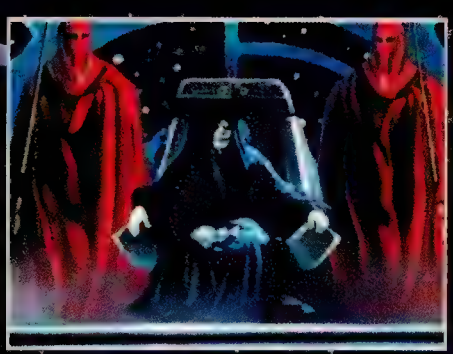

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3D Exposed

66

Okay, so we all agree that 3D is cool. But why is it sometimes such a pain in the neck for gamers to deal with?

What's up with all the different standards—and which one will win out? And are 2D games dead now? To get the answers to this and more, *CGW* talked to a number of leading-edge developers and hardware producers, as well as 3D-card makers. Fret no more. **The truth is in here.**

How to Buy a 3D Card

78

You know you need a 3D card, but how do you know which is the right one for you? It's not just a matter of finding the best bargain—you need to know which cards support the games you like to play. Contributing Technology Editor Loyd Case cuts through the hype and bluster and walks you through the process of buying a 3D card—in plain English.

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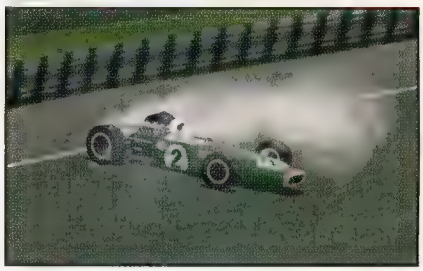
56 Grand Prix Legends



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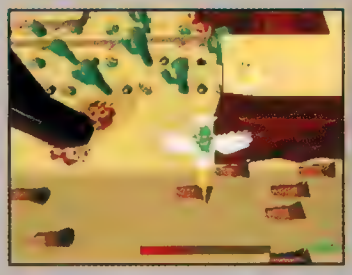

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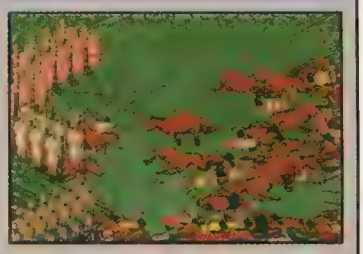

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19:42 Never learn the hard way in the outer sector... Like never get into a drinking contest with a three headed Bukan. Never assume a Strogg is dead even when he's nothing but a bloody scraps of strapped. And never go to bed with a Rabaul no matter how many breasts she has.

"The most anticipated game of the year lives up to its billing."
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19:11
THE LINE BETWEEN MAN AND MACHINE SHOULD NEVER HAVE BEEN ERASED.

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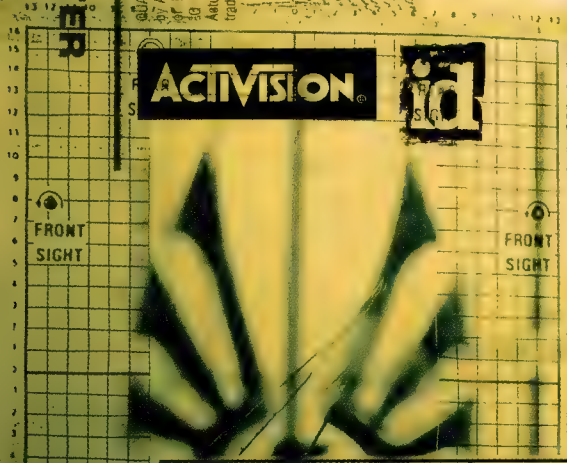

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08:03 Grotesque images of Strogg have been filling my sleep at night. Their metallic spines jutting awkwardly through muscle, skin and connective tissue, masks of human facial skin smeared and bonded to their cyber-alloy heads, crude but powerful weapons jammed into oozing, gaping sockets. Thank God the endless sleep ahead is dreamless.

17:05 It's either us or them this time. We lose, and we all end up barbecued on the grill of some unholy mechanized carnivore. We win, and the human Coalition of Men can start rebuilding the cities on Mars, Olympus, even Earth. Who knows – they might even get the old interplanetary football league going again. God, I miss Monday Night Football.

IV - 39

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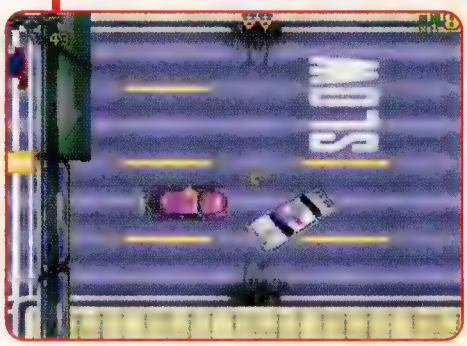
Strategy Spectacular

Savvy Strategists Should Check Out This Month's CG-ROM

This month's CG-ROM offers seven strategy games to test your mettle. Those looking for a new (and more complicated) take on the genre should check out SEVEN KINGDOMS, while the more traditional RTS players can hone their skills with WARBREEDS and EXTREME TACTICS. For turn-based gamers, we have FINAL LIBERATION and EAST FRONT. Action fans can shoot their way through ALIENS ONLINE or GRAND THEFT AUTO. Finally, if you missed them the first time, we've rereleased the CLOSE COMBAT 2 and MYTH demos—complete with scenarios and films—to complement the strategy guides featured in this issue.

FINAL LIBERATION Take on the Ork Boyz of WARHAMMER 40,000 fame in this demo.



GRAND THEFT AUTO Jack cars and kill cops for the Mafia. This one has mature content, so keep the kiddies away from it.

SEVEN KINGDOMS Take the time to learn this complex strategy game and you'll be rewarded with excellent gameplay.

April CG-ROM Titles

TITLES	platform	directory	executable
Air Warrior II	W95	AW3DEMO	aw3demo.exe
Aliens Online	W95	ALIENS	install.exe
Close Combat ABTF	W95	CCABTF	msabtf.exe
East Front	W95	EAST	setup.exe
Extreme Tactics	W95	ETDEMO	etdemo.exe
Fighter Ace	W95	FADEMO	fasetup.exe
Final Liberation	W95	FLDEMO	fldemo.exe
Grand Theft Auto (24-bit)	DOS/W95	GTA24	gta.bat
Grand Theft Auto (3Dfx)	DOS/W95	GTA3DFX	gta.bat
Incubation	W95	INCDEMO/SETUP	setup.exe
Myth	W95	MYTH	mythcgw.exe
Total Entertainment Network	W95	TEN	setup.exe
PGL	W95	PGLDEMO	pgldemo.dem
Seven Kingdoms	W95	7KDEMO	7kdemo.exe
Warbreeds	W95	WARBREED/SETUP	ts_setup.exe
Close Combat ABTF Scenarios		EDGE/CC2	
F/A-18 Korea Missions		EDGE/F18MISS	
Myth Strategies & Tactics		MYTHSCEN	
Patches		PATCHES	

How to Use the CG-ROM

The CD is Autoplay-enabled and should begin upon loading it into the CD-ROM drive. Otherwise, select Run from the Program Manager in Windows 3.x, or Start Menu in Windows 95, and type D:\RUN-ME to run it straight from the CD.

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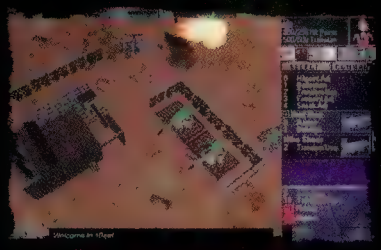
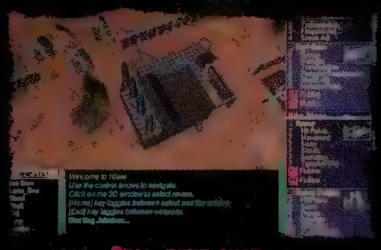


TOP-DOWN DEFENSE MODE.

ALLY OR ENEMY?



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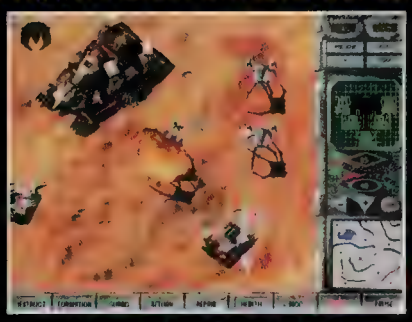

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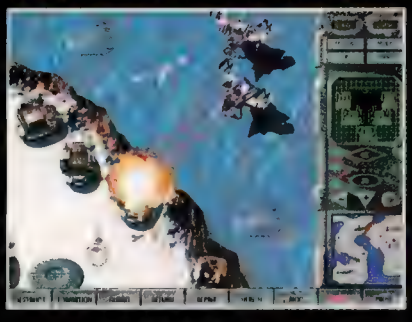

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Play! What Is It Good For?

Why We Shouldn't Be Ashamed of Playing Games

Recently, I made several television and radio appearances with regard to our Holiday Hot 100 shopping guide. As always when dealing with journalists outside the gaming arena, I was struck by two misperceptions about gaming. First, that gaming is primarily for kids. Second, that it's a silly waste of time. Whenever possible, I try to dispel such notions. With regard to the first misperception, the demographics in the survey I shared with you in the January issue certainly assert that computer games are not primarily for kids.

As for the second point, I point out the positive aspects of play. Play is more than the adrenaline rush we so often refer to in a game's "fun" factor, but without that fun factor, we wouldn't keep coming back to a game. Play is more than the rules for procedure, scoring, and victory that comprise a game, but as Paul Newman's Butch Cassidy so eloquently put it, punctuating his assertion with a kick to an opponent's groin, "Ya' gotta have rules!"

So, just in case you get the same patronizing looks I get when you mention playing computer games—or in case you need spousal or parental approval for spending so much time at "silly" games—here's an attempt to elucidate why people play games. You might want to make copies and pass it on to any peer or authority figure who's afraid that you're too caught up in game worlds and not enough in this world.

Why do people play? At first glance, it's simple. People play for exhilaration, accomplishment, and escape. They play to get away from life. They play to experience more from life. Yet, is that all there is to the appeal of play? Animals participate in play in order to sharpen their survival skills, develop innate talents, and establish informal pecking orders. Is human play any less useful?

> **"I suggest that human play is even more useful than play among animals."**

I suggest that human play is even more useful than play among animals. Play among animals can develop stealth, reflexes, and pattern recognition. Play among humans can do that, as well as provide catharsis, establish prestige within a limited circle, and create overarching structures of ideas and approaches (sometimes called paradigms) that can be applied to problem-solving in multiple real-life situations.

In my April 1994 editorial ("Toward A Gamer's Liberation Movement"), I quoted a passage from a Humanities professor at the University of Minnesota (Ralph Ross, *Symbols & Civilization*), who contended that art "offers syntheses of types of experience...yielding possible frameworks in which we can organize the fragmentary bits and pieces of our ordinary lives so that they are related and significant." I still believe that gaming is an art form that accomplishes this.

Gaming is structured play that allows the gamer to assume the perspective of a member of another class or race, a personage from history, a command persona, another sex, another profession, or another belief system. It allows us to earn prestige by accomplishment and, whenever a game is reset, allows us to compete on a level playing field. By letting us accomplish feats and solve problems that we might never face in real life, gaming gives us a vicarious sense of worth and a bit of emotional catharsis—a chance to feel good, perhaps reborn. Nearly every game enables us to improve our organizational and planning skills.

In addition, every style of game has its particular forte. Role-playing and adventure allow us to examine other lifestyles. Strategy allows us to expend and amass resources (whether they be troops, food, gold, magic points, or reputation). Action games allow us to hone reflexes, recognize patterns, and memorize intricate moves. Simulations allow us to participate vicariously in and appreciate situations that are too restricted, dangerous, or expensive for most people to experience in real life.

Yet, all of these game styles and differing perspectives work together to challenge and teach us. Games are "What if?" scenarios that broaden our perspectives significantly as they entertain. Imagine an entrepreneur who started a business without "playing" with business plans on a spreadsheet. That's not someone I'd want to invest in. Imagine a general who didn't "play" possible scenarios before conceiving a battle plan. That's not someone I'd want giving me orders. Play is a vital part of real life. That's not something I'd want to give up.

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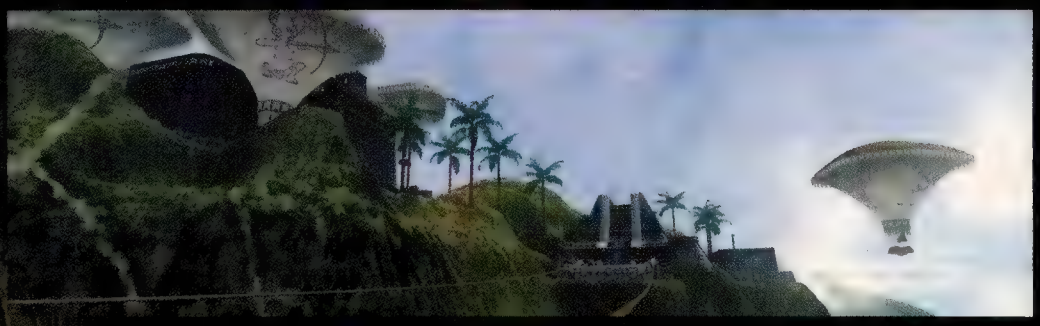

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Death of the Dream

I agree wholeheartedly with Johnny Wilson's editorial "Death of the Dream" (*CGW* #163, February '98), but I think you're wrong as to the cause. It's not the pursuit of short-term profits that is the cause of the poor quality in the industry. The root cause is that the majority of managers in the biz are just as incompetent in the gaming field as in any other industry.

Mike Kelleghan
via the Internet

I just finished reading Johnny Wilson's editorial ("Death of the Dream"), and I had just one thing to say: *Amen!* As the QA manager for GTE Interactive, I was constantly fighting with management over the release date of TIMELAPSE. Sales and marketing had set a release date without so much as a "What do you think?" to me. When I confronted them I was told that it had to be in the stores before Christmas, so I would have to make do.

My testers and I put in a lot of overtime on bug hunts, but either the fixes didn't happen fast enough or one fix caused three more problems. The upper management upgraded TIMELAPSE from alpha to beta to gold master over my protest.

At the end of the six-month testing period, we still did not have a stable game. I again asked that we delay the release date, only to be told that if there were still bugs, "We can always send out patches later."

A lot of good people put in a lot of hard work on TIMELAPSE. Unfortunately a few short-sighted executives were more concerned with the bottom line than the long-term survival of our company or putting out a quality product. As you said, if you take the time to do it right you will have a winner, but when you rush your game out the door in the quest for the fast buck, people will not return to buy your next piece of trash.

I just want you to know from someone who's been there that you hit the nail on the head.

Michael Ward
via the Internet

3D BETAMAX CARDS

Recent *CGW* issues heralded a new batch of 3D cards promising better performance with their various new chipsets. With the present dominance by the 3Dfx Voodoo chipset in the 3D-accelerated PC game market, I fail to see the logic of introducing new 3D cards with non-3Dfx chips. I have a Rendition V1000 card and am fed up that I have no access to such notable games as NBA LIVE 98, EXTREME ASSAULT, and HEXEN II. It doesn't mean crap if the new Rendition V2200 or RIVA 128 can do this or that, if it is not supported by PC game makers! I have nothing against 3Dfx, I just have to kick myself for buying the "wrong" 3D card.

PC game makers who support only one chipset should realize that they are losing potential

HEAVY GEAR CORRECTION

In our March review of HEAVY GEAR (CGW #164), Greg Fortune wrote, "The decision not to include a mission editor or random-mission generator is a serious blow to the replay value of this product." In fact, the game does include a random-mission generator in the form of its dynamic campaign. Greg intended to refer to the lack of a MERCENARIES-style instant-action mode, rather than a random-mission generator. Too much pounding around in the heads of giant robots evidently jangled a bit of Greg's brain. We're fitting him with a special helmet before returning him to the cockpit for his next mechanized shootout.

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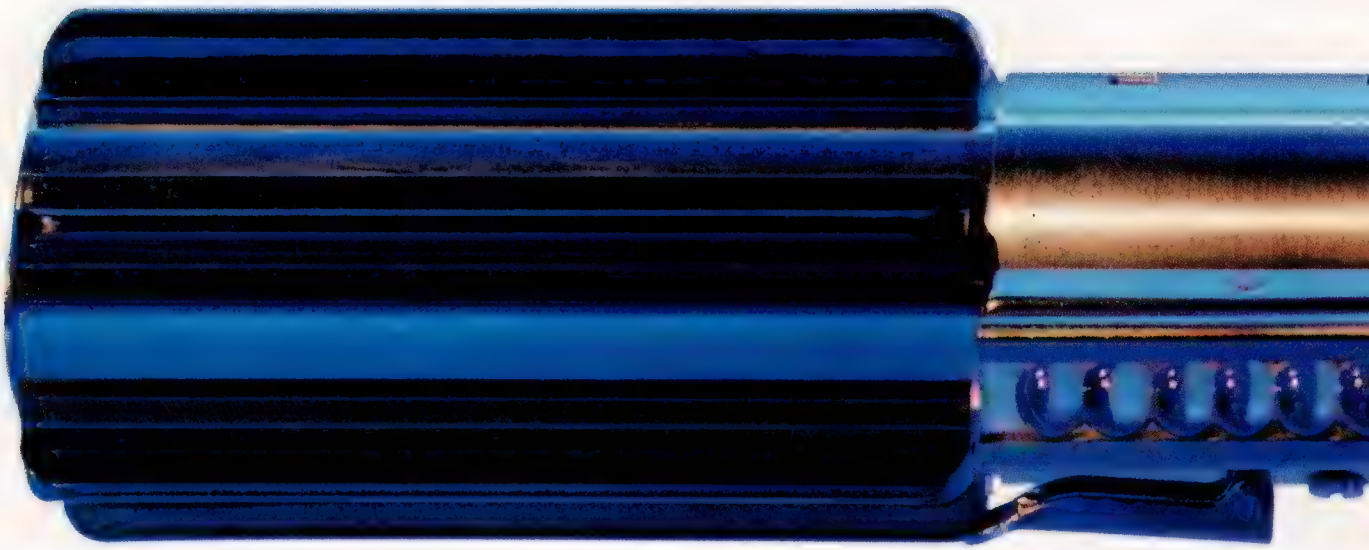

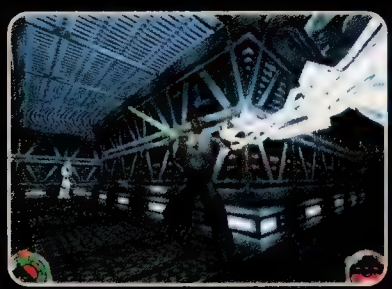

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customers. I, for one, recently dumped the idea of getting the three above-mentioned games, because I discovered they do not support the Rendition chip. Intergraph and Creative Labs (which previously used the Rendition V1000) have since abandoned Rendition in favor of the new 3Dfx Voodoo chip for their latest 3D cards. Which begs the question, "Am I stuck with a Betamax now that VHS is king?

Ashley Tan
Singapore

Technical Editor Dave Salvator responds: The ongoing 3D standards belching contest has created a tremendous amount of confusion in the market. The roots of the problem have been part technical and part religious.

3Dfx enjoys a superior position right now, due in part to its excellent performance, but more so because of its proprietary Glide API, a development tool that allows programmers to make their games "talk" directly to 3Dfx's hardware. Because Glide is specific to 3Dfx's hardware, developers know that it's going to work, and they know what level of performance they can expect at run-time. This combination makes 3Dfx and Glide very appealing to developers.

With Microsoft's Direct3D API, which is a non-chip–specific API, developers don't necessarily know what level of performance to expect, and not all of Direct3D's features have worked correctly in the past. In the world of 3D accelerators, there are Ferraris and then there are Yugos, and all of them can accelerate or, in some cases, decelerate, Direct3D. To further complicate matters, Direct3D is a Microsoft product, which inspires acrimony among some developers.

Are you now the proud owner of a Betamax? Depends on what kind of games you want to play. It's true that 3Dfx has amassed an impressive library of game titles that will run only on its hardware. But take heart. There are still a good number of titles, both shipping and forthcoming, that will use Direct3D and will run on your Rendition chip.

To help cut through some of the confusion, we've now added an entry called "3D Support" to our system requirements information for every game reviewed. We'll let you know which 3D standards the game supports: Direct3D, OpenGL, 3Dfx, PowerVR, or Rendition.

Also, check out this month's feature concerning all things 3D, in which we further clarify which games will run on which platform.

SCORPIA STUNG

I am puzzled why Scorpia is allowed to be such an iconoclast. Not revealing her identity is kind of cute, but allowing her to write reviews that are not rated is growing tiresome. Without a rating and a succinct comment box in the corner, I feel that the games she reviews, whether good or bad, are getting a raw deal. As a result, I really don't pay much attention to what she has to say anymore.

Robert Burg
via the Internet

We agree. Scorpia resisted game ratings because she believes it isn't fair to developers or readers, and makes it tempting to skip the review. The result, ironically, was exactly what she was trying to avoid. Without a rating, her reviews were relegated to the back of the magazine, which was a disservice to the games, and it decreased her readership.

Beginning this month, Scorpia's reviews will be true reviews with ratings.

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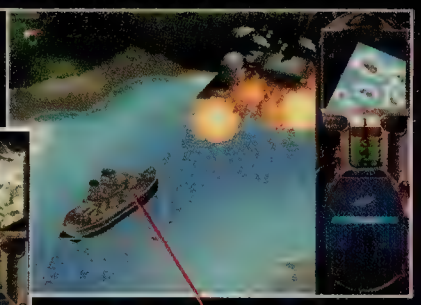

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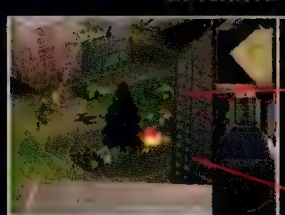

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BYTE.ME

All the News for April Fools

Edited by Charlotte Panther (CPanther@zd.com)

Tomb Raider 2050

Lara Croft: The Once Bombshell, Now Bomb, Returns

It's been a long time since we've seen Lara Croft playing on our hard drives. Once the darling of the computer gaming world, Lara somehow lost her sense of proportion a few decades ago. After a 40-year absence from the digital dungeons, she's trying to make a comeback with her self-funded TOMB RAIDER 2050. *CGW* caught up with England's polygonally encumbered ex-cover-cutie to find out what she'd been up to for all those years.

***CGW:* So, you're trying to make a comeback. (Yawn.) How does it feel to be back after all these years?**

CROFT: It feels great. (Exhaling a volcanic plume of smoke.) I'm finally getting back to my roots. I took great pleasure in deflowering all those computer gaming geeks so many years ago. Unfortunately, when the next big thing came along, they deserted me—I was thrown in the closet with the baseball bats and *Star Wars* cards. Yeah, I saw all those fickle gamers going gaga over every little tramp that bounced onto their screens, but I wasn't worried; I knew they'd come back. Well, get ready 'cause mommy's coming home again!

***CGW:* Aren't you a little old to make a comeback?**

CROFT: Bugger off, you cheeky wanker! Maybe I'm not as spry as I used to be, but I still ooze more sex-appeal from my arse than these new little sluts...

***CGW:* Now, let's be civil.**

CROFT: Alright, I'll be honest with you. I saw the DEATHTRAP DUNGEON XXI disc, starring that little tramp Red Lotus, and I decided, 'Hey, if she can do it, so can I. Red Lotus ain't got nothin' on me.'

***CGW:* Rumor has it you walked in and saw her in a splash screen with your husband, Mr. Nukem.**

CROFT: Bollocks! I dumped that bum a long time before he ran to Lotus. Shame really, he was such a cutie-pie—lovely arse and gorgeous pecs, but nothing going on upstairs.

***CGW:* Which brings up an interesting question. Don't you ever feel like you were exploited by the big gaming companies? You have to admit you haven't been cast in a TOMB RAIDER since Eidos started modeling gravity.**

CROFT: Yeah, I get that a lot. But it's never been just about big boobs and tight shorts. In case you haven't noticed, I'm not exactly easy. I've got the moves that gamers die for.

***CGW:* I see. And what moves can you do now that anyone would possibly want to see?**

CROFT: Lots of new moves, ya pisser. Hit a special key combo and I quickly chug my drink and bash the bad boyz with the bottle. With the new transparency and fog effects, I can blow enough smoke from my fag to confuse an army. Let that Lotus slut try that. And wait till you see my super thigh slam. It'll crack your head like an egg! (Cough, wheeze.)

***CGW:* Well, there we are, a once great game character reduced to a shadow of her former greatness. How the mighty have fallen!**

CROFT: Listen, wanker. One more comment about my breasts and I'll show you some of those moves right now. Just as soon as I remember the combo. Who changed this blasted interface, anyway? Prima donna designers can't leave anything alone!

ILLUSTRATION BY SAM SISCO

Flesh For Fantasy

An Interview With the PGL's Hottest New Poster Boy

In the hotly contested world of the Professional Gamer's League, no one has made a bigger splash than instant celebrity Thierry Nguyen, known to the gaming public as "Flesh." Flesh's QUAKE skills are already the subject of legend, and his success in the PGL has already won him numerous prizes, endorsements—and even a fan club (the "Fleshettes"). But that's not all. Over the past few months, Flesh has been romantically linked to at least three of the Spice Girls (prompting internal squabbling within the group, according to numerous tabloids), and is rumored to be lining up a cameo appearance for James Cameron's upcoming *Titanic 2: Alien Intervention*. *CGW* managed to catch up with Flesh for this exclusive one-on-one interview.

Flesh and his Fleshettes

***CGW*: Did you ever imagine this could happen as a result of being a gamer?**

FLESH: Of course. My parents always told me that gaming was a waste of time, and that I should study and stuff, but I knew better. What am I going to do with an education? Get some low-paying job like being an editor at a gaming magazine? Please. I have ambition.

***CGW*: How did you get to be so good at QUAKE?**

FLESH: Basically by doing nothing else for a year. I wore an IV, so I never had to stop for meals, and I kept a bucket under my chair, for obvious reasons. Not showering or changing for a year kinda sucked.

***CGW*: Are you surprised by all the fame and media attention you're garnering now?**

FLESH: Nah. People are attracted to success. They can smell it. And right now, they can smell me.

***CGW*: Has your life really changed a lot since joining the PGL?**

FLESH: Well, it was like I was telling Scary the other day, I don't think it's—or was it Baby? No, wait—it was Posh. I'm sorry, what was your question again?

***CGW*: Well, what we really want to know is how you've managed to be so popular with the ladies.**

FLESH: Hey, I'm like, an athlete, you know? Women watch me work the mouse and keyboard, and you know, they're all, "check *him* out." Baby told me the other day—no, wait, it was Scary this time—that watching guys playing QUAKE was like the greatest aphrodisiac ever.

***CGW*: Congratulations, Flesh. You must be feeling pretty good these days.**

FLESH: Yeah, dude. Hey, before you go—you went to college, right? What's *aphrodisiac* mean?

Player Stats

Core gamers: 99%
Casual gamers: 64%
How many gamers had a date last Friday night?
Core gamers: 97%
How many of those dates were with their computer?
Source: Deep Throat

GRAPHIC BY XPLANE

News Passé

Huge scoop! CGW has learned that **Sid Meier**'s next CIVILIZATION game will use the QUAKE II engine! Gone will be the focus on the series' more arcane and obtuse elements, such as resource management and economic modeling, which Sid now admits were "boring." Instead, players of CIVILIZATION 3D will advance through time by collecting various power-ups scattered throughout the game-world. "With the QUAKE II engine," said Sid, "we're finally able to take this series where I've always wanted it to go—first-person action combat."

Riotous 3D has released its first graphics card, the Cornucopia 3D. *CGW* contributing Technical Editor Loyd Case says of the card, "The Cornucopia's rhomboid form factor and sapphire metastasized enfilade coatings have enabled it to achieve a 23 percent higher WinDump score, all while simultaneously teleporting Kathy Lee Gifford to Albania."

After the success of a number of prematurely released products, **Sierra** has released ACES OVER LATVIA in uncompiled source code form. Many gamers have been enraged that the sim has no executable files. Says Sierra's Mark Eting-weasel, "In fact, the disc is packed with interesting C++ source code and nearly fully-drawn .BMP graphics files. It only takes a little imagination to put you in the skies over Latvia. ACES OVER LATVIA '99 (due next year) will include such revolutionary features as executable program code, enemy AI, and a flight model.

Edited by Charlotte Panther (CPanther@zd.com)

Unreal Takes Form

GT Interactive's QUAKE-Killer Shoots High

They said it would look good, and it does. They said it would rival QUAKE II, and it just might. The folks down at GT Interactive are finally making UNREAL a reality. When I saw the game in alpha form, it looked as good as QUAKE II, and boasted some features that could portend an even more sophisticated experience.

As the story goes, your character is aboard a prison ship that has crash landed on a planet inhabited by the Nali, a peaceful people oppressed by the warlike Skaarj. The good guy (or girl) that you are, you decide to help the Nali beat back the Skaarj's evil.

There's quite a bit about UNREAL that impressed me. For one, the interaction between you and the game's inhabitants involves more than just violence. In your quest to help the Nali free themselves, you'll need to holster your gun and follow the game's many Nali guides to hidden secret areas.

The AI in UNREAL looks good, and so it should, considering that Reaper Bot creator, Stephen Polge, is creating it. The Skaarj, for instance, leap out of the way of incoming weapons fire. And, typically, an early-level hulking brute may be powerful, but don't expect him to exhibit the kind of thinking that some of the bosses do.

In deathmatch, there will be one great surprise for gamers: the ability to play dead. You can feign death at a keystroke, and when your unknowing opponent runs past your prone body, you can leap up and pump their back full of lead.

However, the best part of UNREAL is its mind-altering graphics. The code for generating such effects as lightning, lava, and water is affectionately known as the "fire engine" to the guys at Epic Megagames. The fire engine's fractal texturing results in liquid and energy effects that give the world a presence of its own. It's the engine's little visual details that can haunt you while playing UNREAL: the silhouette of a creature as it steps in front of a light source, the smoke released by a weapon as it fires, the glow of a weapon as it charges up.

GT Interactive and Epic Megagames are sticking to their early 1998 shipdate, so expect this game in the coming months. They couldn't be more specific than that. A demo/shareware version should hit harddrives before that. Keep an eye out for this upcoming UNREAL experience.—*Tahsin Shamma*

BIG, UGLY, AND SMART

The AI in Unreal should take the game to a new level, thanks to Reaper Bot creator Stephen Polge.

Who Do You Want to Shoot Today?

Microsoft Unveils Part of Its 1998 Lineup

During a late-January trip to Microsoft's Redmond headquarters, *CGW* got a sneak-peek at some of the new titles that Microsoft planned to unveil at its second Gamestock event. Some of the software remains top-secret (we can tell you that AGE OF EMPIRES 2 is under development with all kinds of user-suggested features included, but if we violate our non-disclosure agreement to give you more details, we'll be forced to bundle Internet Explorer with the magazine for the next year). Here are some of the highlights we *can* talk about.

Microsoft should release its first combat flight-sim, currently code-named *Spitfire,* before the end of this year. This isn't the jet simulation that former members of the SU-27 FLANKER team have been rumored to be working on. Rather, it's a World War II combat game based on the FLIGHT SIMULATOR engine. Most intriguing is that, as in FLIGHT SIMULATOR 98, the aircraft and terrain formats will be available to third-party developers and end-users who want to create their own aircraft. Along with that extensibility, though, the game will also be bringing the baggage of the very old FLIGHT SIMULATOR engine, and we'll have to see if the team can get the frame rate high enough for smooth play.

On the hardware front, Microsoft showed a new device code-named *Tilt.* Although it looks like a larger version of the Sidewinder Game Pad, it can also be used in a unique manner—tilting the entire controller sends joystick-like inputs to your PC. It's a natural for motorcycle and driving games, and we found it worked great in MECHWARRIOR: MERCENARIES as well.

The racing game that we hinted at last month is MONSTER TRUCK MADNESS 2. This time, the emphasis is on even better graphics and pure racing fun. It's not a sim, although there will be realistic weather effects and progressive damage. There are now more trucks, tracks, and races, and even a World Wrestling Federation tie-in: Five trucks will be named after famous wrestlers, and Hulk Hogan will make a video cameo. Look for it sometime in summer 1998.—*Denny Atkin and Elliott Chin*

Player Stats

GRAPHIC BY XPLANE

News Flash

It may seem like another April Fool's joke, but this is actually for real. **Interactive Magic** recently announced that that it will release iF-22, version 5.0 this spring. If you're wondering how you missed versions 2.0, 3.0, and 4.0, don't worry, you didn't—remember all the patches Interactive Magic released? They apparently account for the interim versions! IF-22 v.5.0 will include all of those updates released since the game shipped last summer. Thankfully, I-Magic does promise some new game features, including a new Persian Gulf terrain set, a new padlock view, and a virtual cockpit view for easier dogfighting, as well as enhanced graphics and improved AI.

DUNE 2, the 1992 strategy game from **Westwood Studios** that set off the real-time frenzy, has been reborn. The new and

improved DUNE 2000, scheduled for release later this spring, will include all the features that made its predecessor a hit.

Additions to the game will include multiplayer Internet and LAN play, a COMMAND AND CONQUER-style interface to improve speed and ease of gameplay, and new hi-res graphics. The game will also include new video mission briefings inspired by the sets and costumes from the movie.

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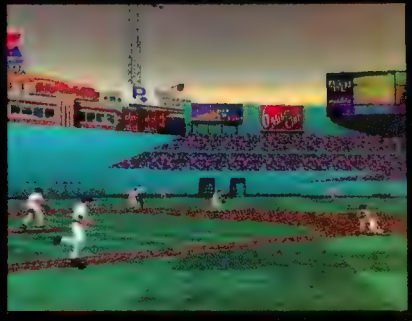

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Will the Real Civ Please Boot Up?

For years, it's all been so simple for computer gamers. Whenever someone talked about CIVILIZATION, you knew they were referring to Sid Meier's magnum opus. When Meier left MicroProse for Firaxis, however, things got a little muddled. In fact, Meier told *CGW* last year that he had "gotten my name back," meaning that MicroProse could only use the SID MEIER'S CIVILIZATION title for games developed while Meier was still at MicroProse. Thus, there won't be any SID MEIER'S CIV III.

Further complicating the issue was a deal signed last August by Activision with Avalon Hill for the "worldwide rights to exclusively develop and publish future interactive titles based on Avalon Hill's classic *Civilization* strategy boardgame." For Avalon Hill, the deal made sense, since PC ADVANCED CIVILIZATION sold less than 20,000 copies. But Activision stated in a press release that "CIVILIZATION computer games based on the best-selling board game have sold nearly one million copies to date in North America," a thinly-veiled slap at MicroProse—which has never publicly acknowledged any connection between Meier's game and the *Civilization* boardgame. Did Activision really think that it could sell an unrelated game as CIVILIZATION III and the buying public wouldn't know the difference?

Not to be outdone, MicroProse confused the issue further. Instead of keeping to its story of the past decade, MPS acquired Harland Trefoil Ltd.—the European company that designed the *Civilization* boardgame—saying that this move "further strengthens one of the most recognized brand names in the industry." What does all this mean? A lot of posturing from suits and lawyers, and at least for the foreseeable future, a lot of games out there claiming to be the true CIVILIZATION. When you add the obvious CIV-children, including MASTER OF ORION, MASTER OF MAGIC, and Meier's upcoming ALPHA CENTAURI, it looks to be a very interesting couple of years for CIV fans. The accompanying CIV Scorecard should help you sort facts from wishful thinking.

—Terry Coleman

Civ Scorecard

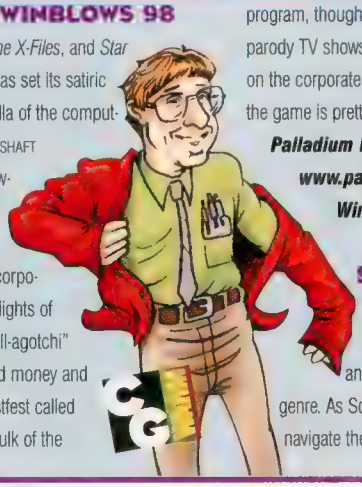
Game	Publisher/Developer	Year	Civ Lore
The Past—Gone but Not Forgotten			
Sid Meier's Civilization	MicroProse/Meier	1991	*CGW*'s #1 all-time game
Master of Orion	MicroProse/Simtex	1993	Steve Barcia's masterpiece is still the quintessential Galactic game
Sid Meier's Colonization	MicroProse/Briggs/Reynolds	1994	Better idea than execution, needed more Sid
Master of Magic	MicroProse/Simtex	1994	In some ways, this "CIV with MAGIC" is deeper than the original
Sid Meier's CivNet	MicroProse/MicroProse	1995	Early simultaneous turn-based attempt for CIV I
The Present—Still Widely Available			
Advanced Civilization	Avalon Hill/Avalon Hill	1996	Not quite as good as the boardgame
Sid Meier's Civilization II	MicroProse/Reynolds & Meier	1996	Over 1.2 million sold, and still going strong
Civ II Scenarios	MicroProse/MicroProse	1996	Good mix of short and long scenarios, particularly *Jihad*
Master of Orion II	MicroProse/Simtex	1997	One of the most "over the top" game designs ever
Civ II: Fantastic Worlds	MicroProse/MicroProse	1997	This add-on even has a *MOO Jr.* scenario
The Future—Ways to Feed Your Civ Addiction			
Ultimate Civ II Multiplayer	MicroProse/MicroProse	1998	Attempts to succeed where CIVNET failed
Sid Meier's Alpha Centauri	EA/Firaxis	1998	The real "CIV in Space" that we've expected for years
Master of Magic II	MicroProse/Simtex	1998	They'll jumpstart this after AGENTS OF JUSTICE ships
Civilization III	MicroProse/Simtex	1999	It might actually ship this millennium
Advanced Civilization II	Activision/Activision/AH	???	Lawsuits loom on the horizon

THIS JUST IN

Short takes on games and hardware released just prior to press time.

MICROSHAFT WINBLOWS 98

After deflating MYST, *The X-Files*, and *Star Wars*, Parroty Interactive has set its satiric sights on the 300-ton gorilla of the computer world, Microsoft. MICROSHAFT WINBLOWS 98 gleefully skewers Janet Reno's favorite monopoly, paying particular attention to the nerdy corporate jackal leading it. Highlights of WINBLOWS 98 include a "Bill-agotchi" virtual pet that must be fed money and a SPACE INVADERS-style blastfest called Winblows Exploder. The bulk of the program, though, is a made up of comedy bits, such as parody TV shows and security cameras that eavesdrop on the corporate campus. Some bits fall flat, but most of the game is pretty amusing.—*Robert Coffey*



Palladium Interactive, (800) 910-2696
www.palladium.net
Win 95/Mac CD-ROM

SCUD: INDUSTRIAL EVOLUTION

SCUD: INDUSTRIAL EVOLUTION is yet another entry into the top-down shooter genre. As Scud, the robotic assassin, players must navigate the maze-like corridors of a futuristic factory to rid its infestation of hideous creatures and mutants. Single-player gameplay comes in two varieties: Solo Play, which involves shooting anything that moves, and Primary Target, which requires you to claim a hostage and escort it to an exit. The graphics are adequate but not innovative. Action fans will find themselves on familiar ground.—*Matthew Schaefer*

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—Computer Gaming World

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—Gamespot

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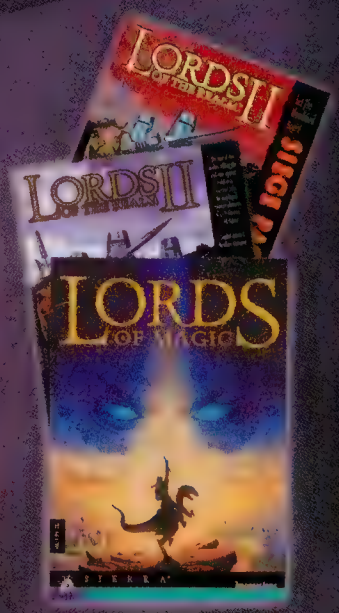

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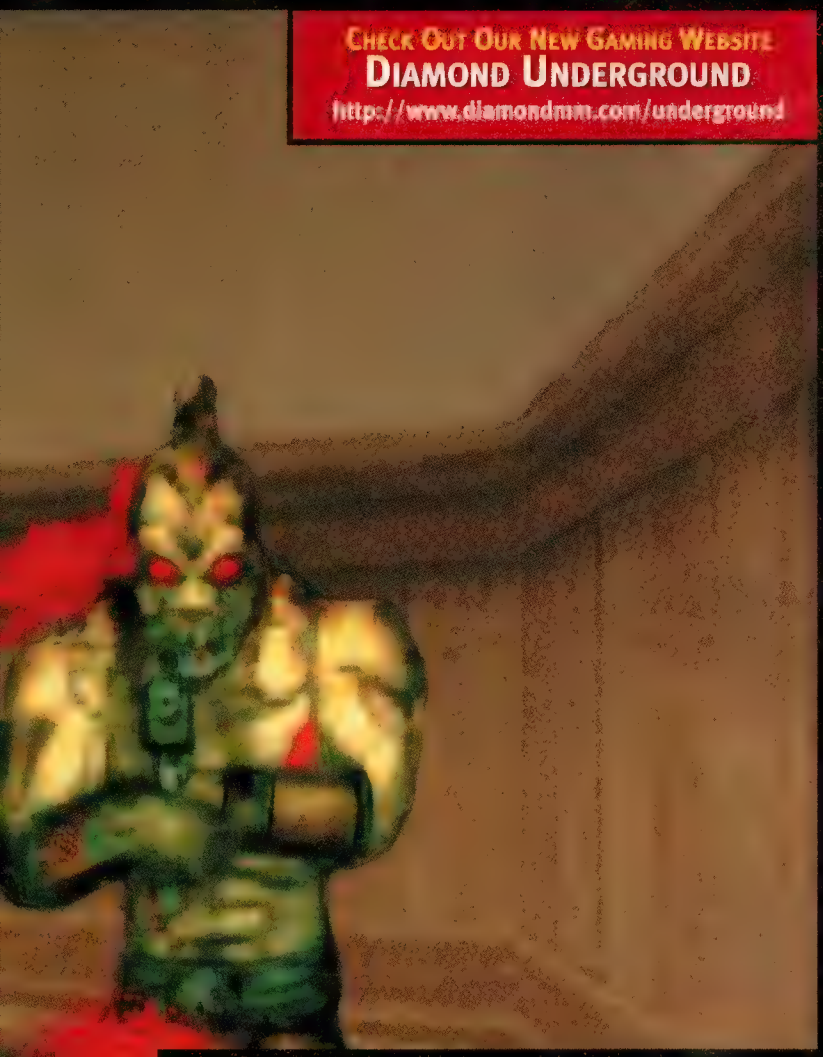

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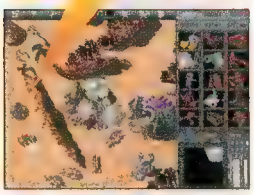
News Flash



Activision is ready to release its DARK REIGN expansion pack: RISE OF THE SHADOWHAND. The planned release date is March, and by the sound of it, this pack will make gamers sit up and take notice. SHADOWHAND will boast several technical and gameplay enhancements. For starters, there will be over a dozen new solo missions and several multiplayer scenarios. There will be new units, including a unit that can deform the terrain, and an animal trainer unit that can tame the new "critters" that will be added to the game. Internet games will also be improved to allow up to eight players. More enhancements include AI tweaks, new buildings, and added features to the construction kit.

With more and more people shopping over the Internet, it's hardly surprising that software outlets are popping up all over the Web. But if you're looking for a particular title and you want to find the best deal out there, **Bottom Dollar (www.bottomdollar.com)** can do the work for you. Just enter the name of the product you're looking for and the search engine provides you with links to sites where the product is available, and lets you know who's selling it at the lowest price.

In the Works

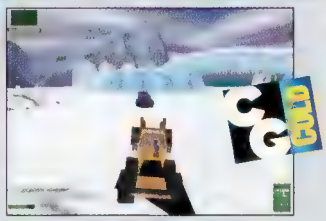
M.A.X. 2: Taking it to the Max

M.A.X. 2, Interplay's return to the strategy genre, is filled with new tactical challenges for players to hurdle. The story continues where M.A.X. left off; the humans in this world are petitioning to join the Concord, a galactic united nations that gives MAX technology to those who join. MAX technology consists of transplanting the brain of the species into vehicles, thus allowing faster and more precise control.

The sequel builds off of M.A.X. (Mechanized Assault and Exploration) by offering real-time gameplay in addition to the original turn-based and simultaneous turns systems. The thing that gives M.A.X. 2 an edge over other games is its terrain modeling. The landscapes during gameplay are as good as can be portrayed in 2D, almost on par with TOTAL ANNIHILATION. The use of parallax scrolling, which moves objects and terrain at higher elevations at a different speed than those at lower elevations, is the game's most compelling terrain feature. Units on high ground appear closer in the top down view. For those extremely precise moments, M.A.X. 2 also incorporates a three-quarters isometric view that gets you closer to the battlefield. Yet, in this age of tactical technicality, the folks at Interplay haven't left out waypoints, line-of-sight, non-scripted AI, and advanced order options such as Guard Units and Seek and Destroy.

Although M.A.X. was not as well received by players as it was by editors, M.A.X. 2 looks as if it might deliver enough exciting gameplay to hook fans, as well as critics, this time around. Look for it in late March.—*Tahsin Shamma*

THIS JUST IN



TWISTED METAL 2

If you've been itching to get your hands on the popular PlayStation release TWISTED METAL 2, it's now available for the PC. Hardware acceleration has been added to the PC version, but sadly, the graphics don't look any better. Otherwise, the game is exactly the same on the PC as it is on the console. Unfortunately, keyboard play proves difficult at best: Sometimes the keyboard won't accept more than two key inputs at the same time—a necessity when you need to turn, fire, and accelerate. Save your money.—*Tahsin Shamma*

Sony Interactive, (800) 438-7794
www.sonyinteractive.com
PC CD-ROM

VIRTUA SQUAD 2

Originally dubbed VIRTUA COP 2 in the arcades and on the Sega Saturn console, VIRTUA SQUAD 2 is a polygonal shooter. Although the game offers plenty of John Woo-type action, the entire experience is over all too soon (there are only three main stages). Gamers raised on DUKE and QUAKE may scoff at the inability to go wherever they want, whenever they want (VS2 features noninteractive game advancement), but the cinematic, corny B-movie antics that permeate this game have yet to be replicated in a first-person shooter.—*Kelly Rickards*

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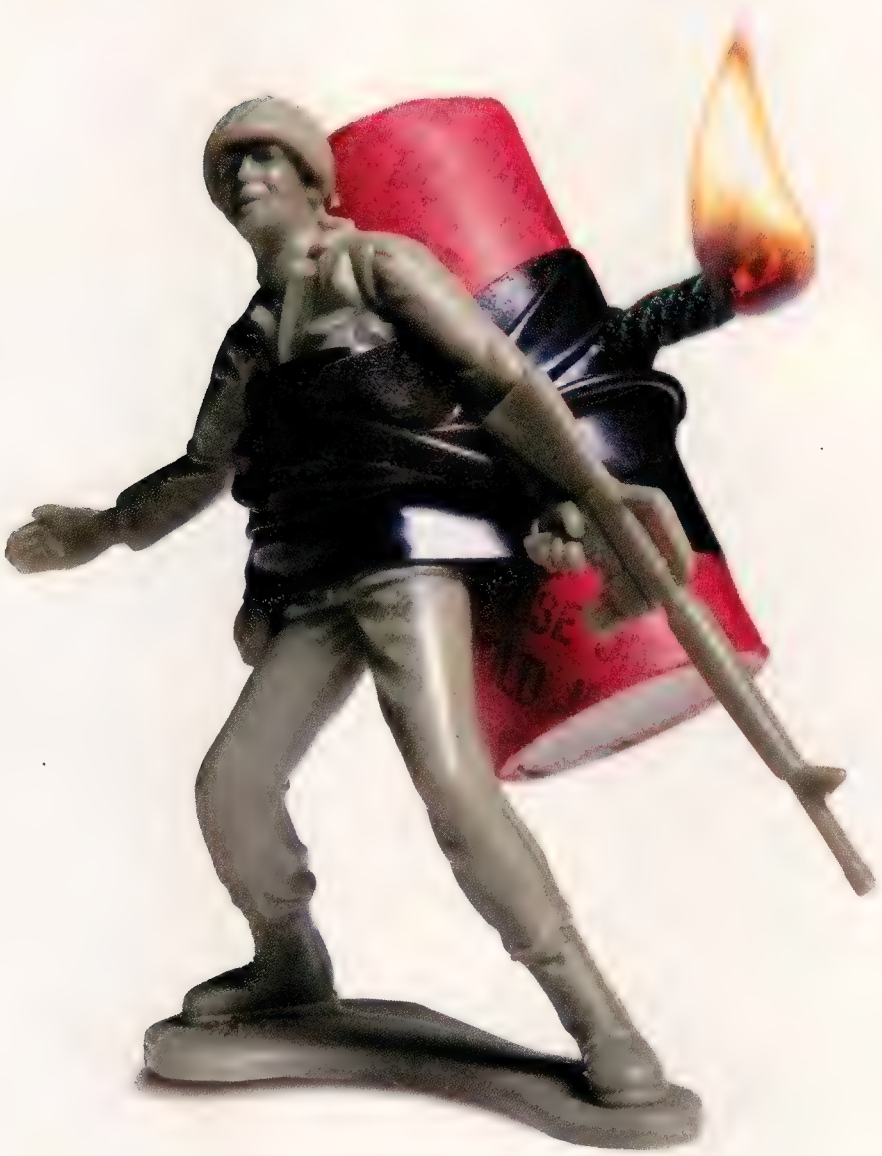

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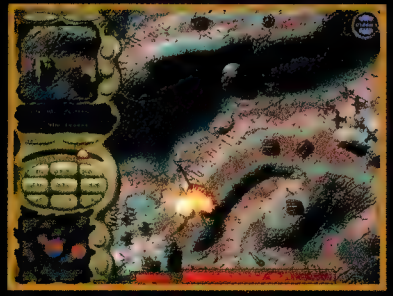

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MAX 2

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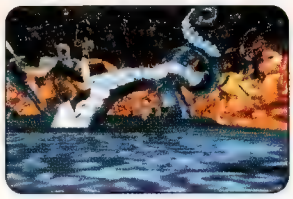
In the Works

Die By The Sword: Savage Swordplay

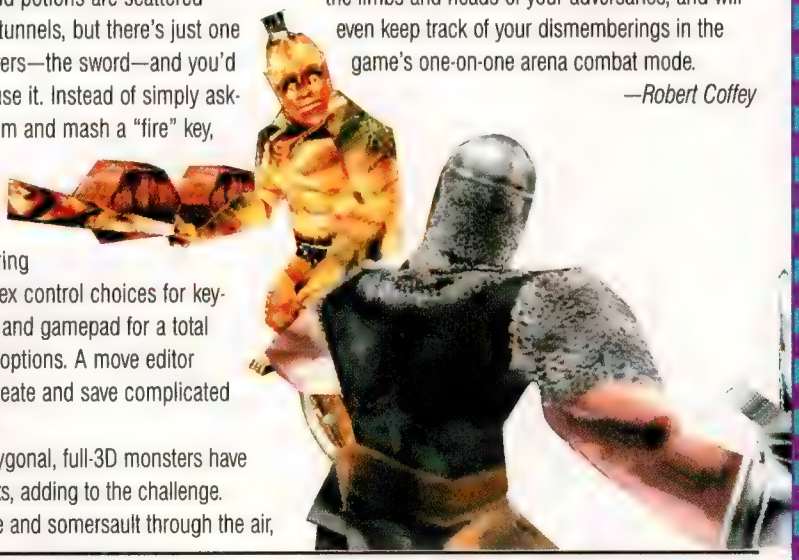


DIE BY THE SWORD will bring the third-person action of games such as TOMB RAIDER up close and very personal. The game casts players as one of two sword-slinging heroes hacking and slashing their way through cramped, winding dungeons filled with orcs, ogres, and the like. While there are some puzzles and jumping sequences, the focus here is squarely on combat.

Power-ups and potions are scattered throughout the tunnels, but there's just one weapon for players—the sword—and you'd better learn to use it. Instead of simply asking players to aim and mash a "fire" key, DBTS really tries to place that sword in your hand, offering multiple, complex control choices for keyboard, joystick, and gamepad for a total of five different options. A move editor allows you to create and save complicated custom attacks.

All of the polygonal, full-3D monsters have individual attacks, adding to the challenge. Skeletons dance and somersault through the air, diminutive kobolds leap high over your best backhanded slashes, and ogres exploit their superior reach to pound you into jelly. As with Activision's NIGHTMARE CREATURES, DBTS allows you to lop off the limbs and heads of your adversaries, and will even keep track of your dismemberings in the game's one-on-one arena combat mode.

—Robert Coffey



THIS JUST IN

GOMAN

A team of international humans is being readied to guide a group of three-dimensional Japanese animated-robots in GOMAN. The enemy is a group of 3D alien creatures bent on destroying vital locations around the globe. Players controlling one of five different robot-types must use strategy combined with firepower in a battle against 18 huge monsters and innumerable monster spores. Keyboard control is particularly non-intuitive, the level-design could use some work, and there are numerous clipping problems with enemies walking through buildings. While monster AI appeared no more impressive than in other action titles, developer Coconuts claims that it will allow monsters to react differently according to how you play the game.—*Allen Greenberg*

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Win 95 CD-ROM

PIPELINE

Aces: X-Fighters Sierra	Q3 98
Asheron's Call Turbine/Microsoft	Q2 98
Battle of Britain 1941 Talonsoft	Q3 98
Battlezone Activision	Q2 98
Creatures II Mindscape	11/98
Deep Six Virgin	Q1 98
Duke Forever Apogee/3D Realms	6/98
Earthworm Jim 3 Interplay	6/98
Extreme Warfare Red Orb	Q1 98
Fighter Duel 2 Ocean	Q1 98
Flying Nightmares 2 Eidos	Q1 98
Galactic Mirage Virgin	7/98
Grand Prix Legends Papyrus	Q1 98
Guadalcanal Avalon Hill	Q2 98
IF/A-18 Interactive Magic	5/98
Jane's F-15 Jane's/ EA	Q1 98
MechWarrior III MicroProse/FASA	Q4 98
Might & Magic VI New World/3DO	Q1 98
Operational Art of War TalonSoft	Q1 98
Panzer Commander SSI	6/98
Phantom Ace Virgin	Q2 98
Quest For Glory V Sierra	Q1 98
Reach for the Stars II Microsoft/SSG	1999
Redline Accolade	5/98
Revolution Fenris Wolf/GT Interactive	10/98
Screamer 3 Virgin	Q3 98
Settlers 3 Blue Byte	Q3 98
SimCity 3000 Maxis	Q1 98
Squad Leader Big Time/Avalon Hill	Q3 98
Star Trek: First Contact MicroProse	Q2 98
Trespasser: Jurassic Park DreamWorks	Q1 98
Ultima IX Origin	Xmas 98
VR Baseball '99 Interplay	Q1 98
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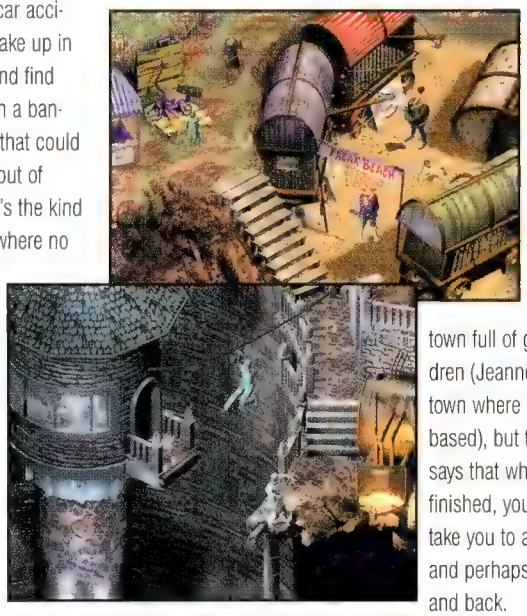
RP

In the Works

Sanitarium: Insane in the Brain

Following in the tradition of many movie and TV show plots, SANITARIUM casts you as the amnesia-stricken victim of a car accident. You wake up in a hospital and find yourself with a bandaged face that could be straight out of *Darkman*. It's the kind of hospital where no one bats an eyelid at the sight of a guy bashing his head upon the wall in constant rhythm. And when you start talking to children with decaying faces and two mouths, that's the cue to start worrying about your sanity.



SANITARIUM is the latest adventure game from DreamForge (CHRONOMASTER), in which you find yourself searching for the most fundamental characteristic of one's life: your identity. A deeply disturbing and surreal mystery unravels as you travel to odd locations digging up memories of your past and trying to discover why you're here. The alpha I played only let me go as far as a deranged town full of grotesque children (Jeannette, the actual town where DreamForge is based), but the company says that when the game is finished, your journey will take you to an Aztec temple and perhaps even to Hell and back.

SANITARIUM plays much like a standard adventure game, with icons for look, talk, and use/pick-up. The game contains a subtle sense of humor to counter its dark, disturbing atmosphere. Adventure gamers should keep an eye out for this one.—*Thierry Nguyen*

PLAYING LATELY

CGW Survey

	Last Month	Months on Chart
1. **Civilization II** (MicroProse)	3	22
2. **Jedi Knight** (LucasArts)		1
3. **Diablo** (Blizzard/CUC)	1	11
4. **Total Annihilation** (GT Interactive)		1
5. **Quake** (id Software)	2	18
6. **Fallout** (Interplay)		1
7. **Duke Nukem 3D** (3D Realms/GT Int'l)	7	22
8. **Red Alert** (Westwood/Virgin)	4	12
9. **X-COM: Apocalypse** (MicroProse)	8	4
10. **Heroes II** (New World Computing)	9	11

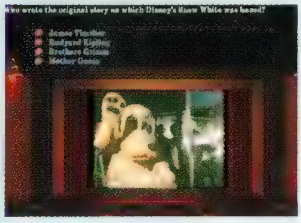
PC Data Best-Sellers

	Last Month
1. **Riven: The Sequel to Myst** (Red Orb)	1
2. **Quake II** (id/Activision)	
3. **Barbie Magic Hair Styler** (Mattel)	4
4. **Myst** (Red Orb)	2
5. **Microsoft Flight Simulator 98** (Microsoft)	3
6. **Lego Island** (Mindscape)	5
7. **Frogger** (Hasbro Interactive)	
8. **Tomb Raider II** (Eidos)	10
9. **Deer Hunter** (GT Interactive)	7
10. **Tonka Search & Rescue** (Hasbro Interactive)	

THIS JUST IN

20TH CENTURY TRIVIA CHALLENGE

American pop culture was obsessed with England even before the advent of the Beatles, so an Anglo-centric trivia game makes sense—on the surface. Sir-Tech should have noted, however, that even Berkeley Systems declined to release its "Union JACK" on these shores—and TRIVIA CHALLENGE is anything but YOU DON'T KNOW JACK. The constant patter of the annoying pseudo-Brit master of ceremonies ("Scones and jam at the ready!") makes the snide commentary of JACK's hosts seem downright inviting, and the faux Movietone-style clips recall the horrid multimedia of PC TRIVIAL PURSUIT. Unfunny, uninspired, and trivial in every sense of the word. Righty-ho, indeed! --*Terry Coleman*



Sir-Tech, (315) 393-6633
www.sir-tech.com
Win 95 CD-ROM

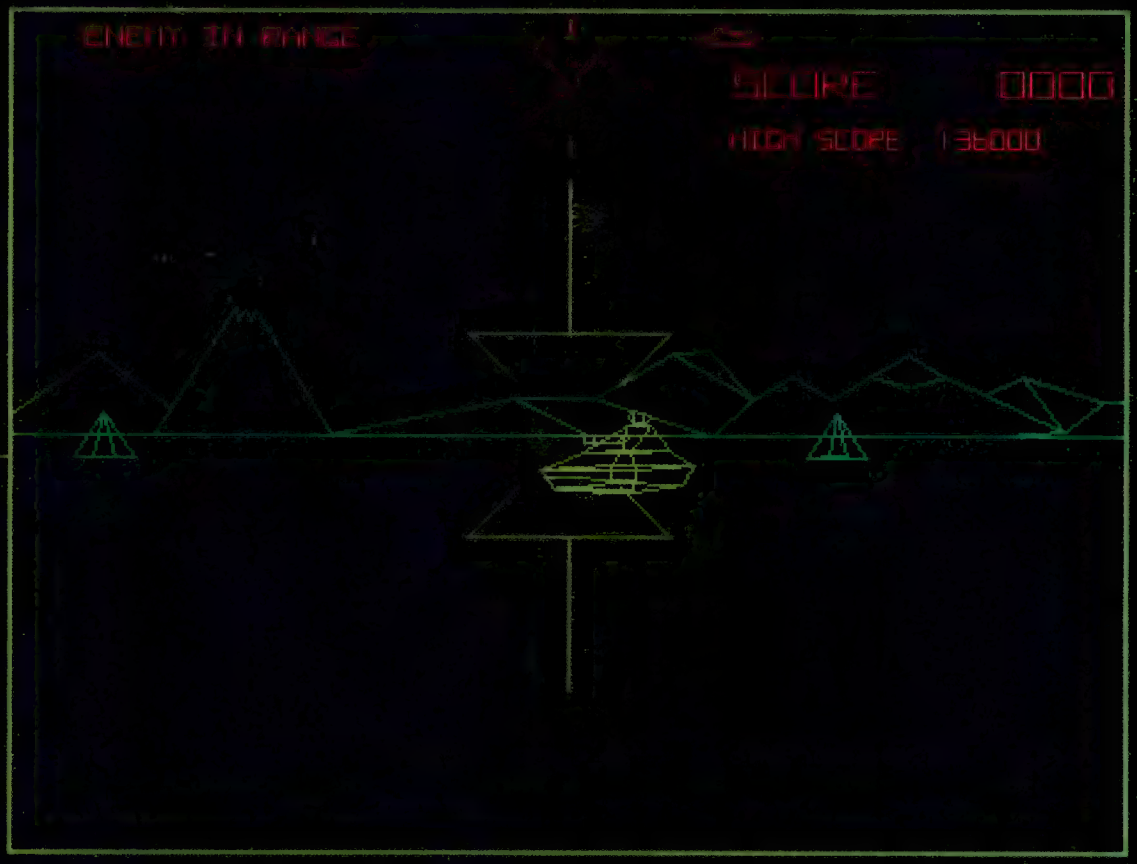
DESCENT TO UNDERMOUNTAIN

The search for a good *Dungeons and Dragons* role-playing game continues, because Interplay's DESCENT TO UNDERMOUNTAIN is certainly not it. With apologies to the hard-working design team, this game completely missed its mark.

The graphics look two years old, the sound is inconsistent, the monster animation is stilted, and the performance is slow. What is good about UNDERMOUNTAIN? There's more monster interaction than I'd anticipated. This could have been at least a decent game if Interplay had released it on time—a year and a half ago—but today, it's not worth your time or money.—*Elliott Chin*

Interplay, (714) 553-6655
www.interplay.com
PC CD-ROM

The Boundaries Between Action and Strategy Are Being Redrawn.



Command System: An innovative menu system integrates troop and resource management for full control from within your anti-grav vehicle.

Scrap/Pilot Meters: Both are a resource. Gather Scrap for your unit-building Factories; build Barracks to add to your supply of pilots.

Solar Array: The Solar Array provides power to your Factories, Gun Towers and other energy-intensive units.

Scavenger: Send your Scavenger to collect valuable Scrap. Gather from scrapfields or destroyed units on the battlefield.

Actual Screenshot.

Gun Tower: This devastating, long-range defensive unit is powered by the vulnerable Solar Array.

3-D Radar: A topographical 3-D radar displays your base location, unit placement, field of vision and enemy position.

Grizzly Tank: Configure a Grizzly, the key American tank, right on the battlefield.

Weaponry: Spend resources to reconfigure your vehicle's weaponry on-the-fly in the midst of battle.

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Set up way-point navigation beacons along the battlezone to stage attacks or for surveillance purposes.

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In 1980, Battlezone took the computer universe by storm as the first 3-D game ever. In 1998, Battlezone re-invades with a revolutionary new genre — the first true real-time action-strategy war experience.

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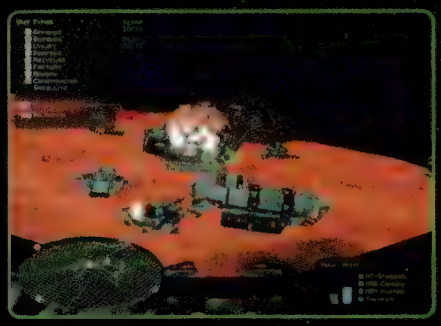
Full-Scale 3-D Action
Pilot one of 20 anti-gravity war machines, and wield 25 devastating weapons — including mortars, mines, and the Thumper Device which triggers on-the-fly earthquakes on the morphable terrain.



Complete Strategic Control
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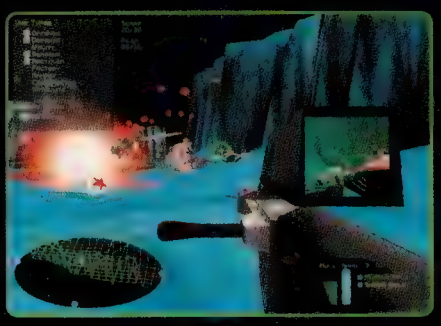

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Just Man, Muscle, and Machine

Papyrus Brings Back the Ghost of Grand Prix Past

by Johnny L. Wilson

The year was 1967. Saturday afternoon meant auto racing from all over the world with ABC's *Wide World of Sports*. In the United States, Parnelli Jones and A. J. Foyt dueled for dominance at Indy. In the greater world, the world of Formula I racing, men like Jim Clark, Jochen Rindt, Jackie Stewart, and Dan Gurney dueled on the twisting, grueling road courses of Europe, Central America, South Africa, and the U.S. The cars had no downforce design. Drivers who hung it out by sliding through curves at Spa, Rouen, and Nurburgring had no aerodynamic assistance to hold cars to the road. Sets of tires sometimes lasted through three races. No one would think of such a thing today. It was open-cockpit racing with Death as your copilot. It was man, muscle, and machine dueling for supremacy.

Now, Papyrus invites Baby Boomers and youngsters alike to relive the days before engineering was king—when racing had about it the ultimate Darwinian luster of survival of the fittest. GRAND PRIX LEGENDS (GPL) is unlike any racing game you've ever encountered, and may well take the pole position with better graphics, more accurate physics, and more satisfying gameplay than any racing game to date.

SEMBLANCE OF THINGS PAST

GPL simulates realities that have never before been simulated. Every tire has its own physics model. This affects not only the car's handling, but even the way such simple graphics as smoke may look. The graphics for smoke are dependent upon tire heat, tire pressure, tire position, speed, rotation, and road surface. In a collision, it is even possible to get the wheels interlocked with those of other cars.

If your right rear tire, for instance, is resting on a wall, you can drive right off that wall, but you'll have to deal with the potential spinout when the other tires are spinning at different speeds. The tire models factor in all the things you hit in the world—hedges, fences, barriers, concrete walls, gravel, and so on. In fact, if you drive off the road at Zandvoort in South Africa, you might discover something you've never encountered in a racing sim before: sand traps.

This is satisfying enough in the Formula 2 and Formula 3 cars, in which you can often throttle full down and use the steering to slide through curves, and in the street cars that you take out to learn the track. However, things get very wild in the Grand Prix (Formula I) cars. With

IN THE COCKPIT GRAND PRIX LEGENDS puts you in the open-cockpit era of life-and-death racing.

LOTUS SHOWER Optional camera angles let you check out your latest spinout and the realistic trail of smoke as you struggle to keep your Lotus/Ford under control.

more than 400 horsepower, these monsters can spin at any speed. Recovering from a spin by bearing down on the throttle isn't nearly as easy as it is in the other cars. For gamers like me, the chance to drive a Brabham, BRM, Eagle, or Lotus from this era is a dream come true.

FAST TRACK

GPL also brings new standards in track modeling to the genre. At the time of this preview, the following classic tracks had been successfully licensed for use within the game: Kyalami, Mexico City, Monza, Mossport, Rouen, Spa, Watkins Glen, and Zandvoort. It was not clear whether Nurburgring (roughly 16 miles of wicked road course) would make it into the game, but courses like Spa, Rouen, and Zandvoort—very long tracks with lots of altitude changes—are extremely delightful (or masochistic, depending on your skill level) to drive. Even straightforward courses like Monza have degrees of detail, like seasonal foliage and accurate sponsors, that add to the experience.

Getting licenses for many of these tracks has been a nightmare. Some of the configurations no longer exist. Further, many of the European towns and villages didn't really want the courses mapped out as accurately as Papyrus planned to execute them, for fear that tourists would try to match Grand Prix speeds on those old roads. Fortunately, Papyrus' diligence is beginning to pay off. For example, the record lap at Spa in 1967 was 3:28:30. The fastest Spa lap done in GPL to date is 3:30:00.

WORLD-CLASS HOST

One interesting fact in the way Papyrus has been developing the game is that, even in the single-player mode, the game engine treats the player's machine as a server. In single-player mode, the AI is handled as though it is another human competing on the player's host machine.

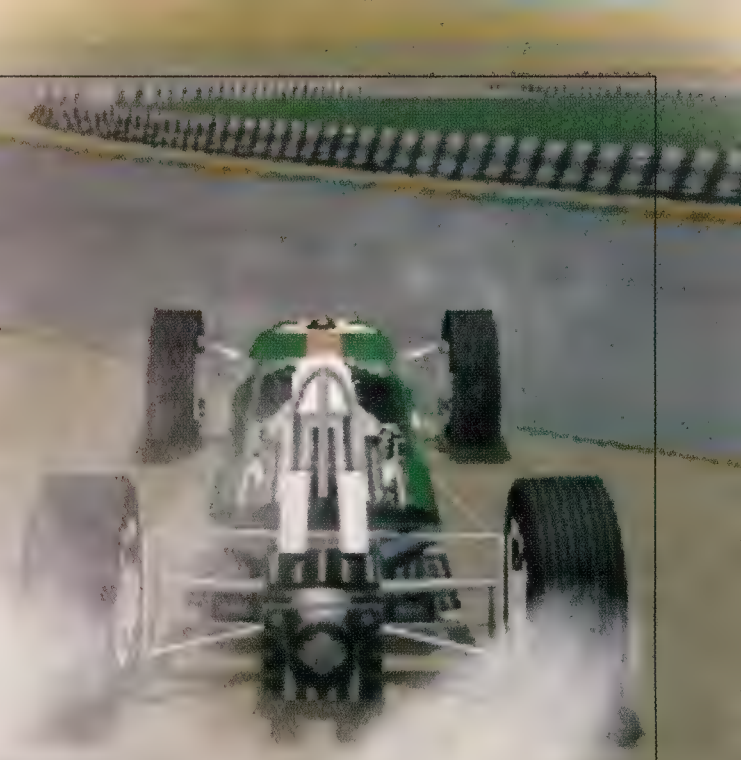
This design decision has slowed development. The problem is that the game is trying to run a real-time world, but it is now broken into disparate parts—each separated by bits of time. Each portion of the world has to make guesses as to where the other players are. So, such factors as collisions are problematical. If those guesses don't look right, it hurts the experience and looks wrong. Latency compounds things. Fortunately, the team seems to be getting a handle on these problems.

The design decision also affects the way the driver AI is being developed. AI cars use the same engine model as the gamer, and they actually shift gears. Some will handle tracks clean and fast, much like Jim Clark, but the algorithms will factor in plenty of opportunities for mistakes so that drivers won't have lap times within a tenth of a second per lap (as in current AI drivers), and you'll have opportunities to make moves. Further, the new AI module will have lots of tunable parameters to be made per driver. Some drivers will hang their car out by being more aggressive with regard to oversteering, some will be clean in driving, and some will appear to take questionable chances in certain situations.

At the time I played the game for preview, we could play multiplayer over the Papyrus LAN. Some of the collision parameters weren't quite complete, so we could get caught in fences and stuck in walls if we spun out of control. In fact,

LOOK THROUGH MY EYES If an AI driver is competing, you can actually view the race from his cockpit and see his arms and hands move as he struggles with the same shifting and steering problems you face.

some of the crashes were spectacular, with cars spinning and flying far beyond the limits of reality. After one such crash, we appended the nickname "Flying Irishman" to yours truly, but the bottom line is that the multiplayer version works very, very well. Watching your opponents in your rearview mirrors may cause you to hang the car out too far and send you over hillsides and into hedges, barriers, and fences. Your heart pumps all the faster knowing that these cars are challenging to handle and those other guys are right on your tail.



HULME SWEET HULME Drivers like Denis Hulme (shown here and below), the 1967 Formula I World Champion, will be included in the game.

VIVE LA DIFFÉRENCE!

Some of the differences between GPL and other racing games involve design decisions, while others are strictly related to the era. Papyrus doesn't believe in onscreen course maps. They're not realistic, and they are both distracting to the actual driving and costly in CPU time.

In terms of setup, tire compounds do not play a role in the era. In 1967, tires were all pretty close. There weren't the same kinds of trade-offs as with modern tires. In 1967, cars did not refuel during the race. Some engines were thirstier than others. The amount of fuel with which you start a race varies, and you don't have to choose your fuels. As fuel is used, however, the car's center of mass changes, and this may create under- or oversteer. This weight change doesn't occur merely at critical junctures, either. Whenever the engine is running, fuel is being consumed, so this is checked constantly.

This era also didn't use telemetry. Right now, Papyrus is using a telemetry model to debug the game or to plot distance around the track via speed or lateral G forces. They'd like to leave the telemetry model in as an undocumented feature, but this could create a quality-assurance problem.

During the '60s, all cars used Double-A arm suspensions, but each car has custom parameters for roll, dive/squat under braking or acceleration, camber curves, and so on. However, unlike in the present day, these were built-in by the manufacturer, so the gamer won't set these.

What you will be able to adjust in GPL includes spring rates; shocks for bump and rebound; tire pressures; antiroll bar stiffness; brake bias (cockpit adjustable); differential settings (limited slip differential); some static suspension parameters, such as camber and toe-in; and possibly some engine parameters (tuning for a high-torque, twisting road course versus high-speed setup), steering ratio, and gear ratios.

FINISH LINE

Grand Prix Legends looks like the pole qualifier for all of 1998. It offers incredible visuals, sounds, and challenges, along with the most realistic physics yet (because of the four-wheel model). With full racing-seasons for each of three styles of cars, and advanced AI modules for the drivers, GPL stands to set new records for all racing enthusiasts. Best of all, it gives Formula I fans the chance to race against all-time greats like Chris Amon, Lorenzo Bandini, Jean-Pierre Beltoise, Joakim Bonier, Jack Brabham, Jim Clark, Ritchie Ginther, Dan Gurney, Graham Hill, Denis Hulme, Jacky Ickx, Chris Irwin, Jochen Rindt, Pedro Rodriguez, and Jo Siffert.

If GPL provided only that nostalgia, it would be enough, but combining the glorious nostalgia with the latest simulation technology takes the checkered flag.

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Target Release Date: April/May 1998
Developer: Jane's Combat Simulations
Publisher: Jane's Combat Simulations

Big Bird

Jane's F-15 Is Poised to Dogfight FALCON 4.0 for the Title of Top Gun

by Denny Atkin

From every indication in the beta version I've been flying, Jane's F-15 will not only satisfy hard-core flight-sim fans, it will blow them away with its realism. Driven by Andy Hollis (the man behind the LONGBOW series), implemented by a team with such titles as F-15 STRIKE EAGLE III and F-14 FLEET DEFENDER under its belt, and critiqued by former and current F-15 pilots, Jane's F-15 promises to be an authentic, immersive experience. But if you're not an expert fighter pilot, or you're more interested in dogfighting than in learning the ins and outs of radar systems, don't despair: F-15 is fully configurable and should be accessible to the complete novice.

ON TARGET You can track targets with a fully functional virtual cockpit or use the WARBIRDS/AIR WARRIOR-style numeric keypad views.

HARD-CORE COCKPIT

Jane's F-15 simulates the F-15E Strike Eagle (or "Mud Hen," to many Air Force pilots), the strike fighter version of the aircraft. Although charged primarily with ground-attack missions in Operation Desert Storm (its combat trial-by-fire), the F-15E retains the air-to-air capabilities of the earlier pure-fighter variants (called "Albinos" for their lighter paint schemes) and can defend itself quite ably in a pinch. While the plane wasn't used as a fighter in Desert Storm due to the nature of the air war, its pilots practice air combat and it could easily fill that role in the future.

The F-15E is a two-seater, with the pilot concentrating on flying while the backseater targets ground weapons. For the sim, Jane's has simulated both cockpits. The front-cockpit instrument panel has your heads-up display, three MPDs (Multi-Page Displays), and the Up-Front Console. In the rear seat you'll find four more MPDs; for the most part you'll use the backseat position for quick access to the information on these additional MPDs, which can include radar, armament indicators, a tactical situation display, engine data, and infrared and weapon video. Although you do the work of both crewmembers, your wizzo (weapons systems officer) will provide commentary and systems updates during the flight.

Jane's has modeled the systems with exacting detail. Air-to-ground radar, for instance, features RBM (Real Beam Map), a fast-updating, low-resolution radar for viewing upcoming terrain; HRM (High-Resolution Map) mode, used to view areas in greater detail for targeting; GMT (Ground Moving Target) mode, which displays no terrain but can locate moving vehicles within a 32-nautical mile range; and IGMT (Interleaved GMT) mode, which superimposes GMT target data over the RBM terrain map. Air-to-air systems are modeled with similar detail. Symbology, operation procedures, and capabilities of these radar systems all have an authentic feel. And don't worry about learning dozens of keys to take advantage of these capabilities—you'll set up your systems and weapons using your mouse to press the buttons surrounding the MPDs. The menu systems in the real plane are fairly easy to follow, and the learning curve isn't too tough.

More challenging for many to learn will be the realistic flight model, which is as big a quantum leap over previous sims as FALCON 3.0's was in its day. It's so tough to master that I've lost control of my plane in dozens of new ways.

KEEP IT SIMPLE, STUPID

If you prefer quick combat, you can install the game in "Casual" mode. This simplifies things dramatically. You now have a four-key weapons interface (change weapon, change target, fire weapon, fire cannon), simplified radar displays, and predesignated primary targets.

NIGHT FLIGHT As in real Desert Storm operations, you can count on plenty of night missions. As time passes, shadows will lengthen, the sun will set, and darkness will gradually fall.

FLARE FOR COMBAT A Strike Eagle drops a flare in an attempt to distract an incoming missile.

In addition, the flight model is simplified. There are no weight effects on the plane, no side-slip, no G-limits, no crashes, and your plane is loaded with infinite fuel and a rearm key.

In Casual mode, you'll start and end missions in the air, near the action. In Expert mode, you'll be able to fly the full mission profiles. For longer missions in the historical Operation Desert Storm campaign, you'll need to air-to-air refuel before closing on the target. The fictional Iranian campaign puts you closer to the action, so refueling is optional for those gamers who know not to leave the afterburner running. Both time compression and a "jump to the action" key will be available.

The campaigns are scripted, and the missions include a level of detail and historical authenticity so far unseen in dynamic campaign engines. But there's plenty of replay value, because Jane's has included random elements (locations and probability of appearance of various units) and a wide variety of potential mission sequences. If your squadron does well, you'll get more challenging missions, just as in real life. Targets will remain destroyed between missions (as in real life, again, they'll eventually be repaired), and you can optionally enable resource management.

UNDER THE SKIN

One additional element will enhance replayability: the inclusion of a mission builder of unprecedented capability. You can drop units onto the map to set up a quick combat situation, or you can utilize randomness, conditional situations, and the full depth of the mission engine—this is the same tool the designers used to create missions. You can create only single missions, however, not entire branching campaigns.

You'll also find training missions; an instant-action mode, which lets you specify air and ground opponents as well as weapons loadouts; and a multiplayer mode. Multiplayer is a head-to-head dogfight-type option; you won't be able to fly cooperative missions in this version (but we wouldn't be surprised to see that capability in a sequel).

If you've played either of the LONGBOW games, you'll find many of their bells and whistles here: detailed realism options, fully configurable keyboard layout, and massive amounts of documentation on the aircraft and how they're employed in combat. The interface here is very drag-and-drop oriented, and you'll be able to perform many operations more quickly and easily than in the LONGBOW games.

The graphics environment has much of the look of LONGBOW 2, with both 2D and 3Dfx Voodoo support (Direct3D support *may* follow after the game's release). Frame rates—all-important in a jet sim—are smoother than in LONGBOW 2. Look forward to plenty of dazzling effects, from subtle lens flares to dramatic secondary explosions when you bomb an oil tank farm.

If you're looking for the next level in realism or you want a sim in which you can gradually crank up the features while you learn to fly, you'll definitely want to give F-15 a test flight.

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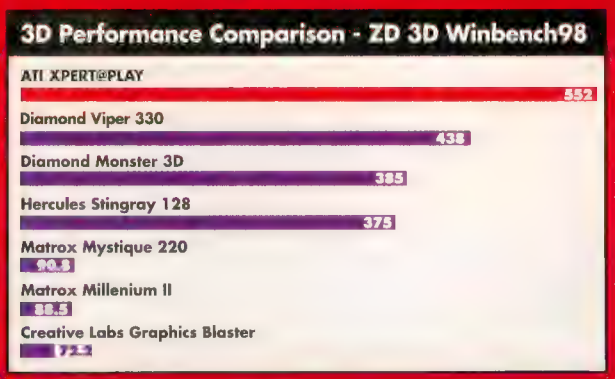

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Part 1: 3D Behind the Scenes

How 3D Improves Games, Why 3D Gives Gamers and Developers Headaches, and How All Those Little Polygons Get in There in the First Place.

by Denny Atkin

Welcome to the second generation of 3D games. We're past the stage of oohing and aahing just because a game happens to run on our 3Dfx or Rendition card, the days when a smoother frame rate and a smoothing out of those blocky pixels were enough to justify our 3D card purchases. As the market matures, we're starting to see games in which 3D truly enhances the experience, providing scarier monsters, photo-realistic fighter jets, and explosions that would turn a Hollywood pyrotechnics expert green with envy.

But while games have gotten better, this generation hasn't brought a cure to the headaches associated with 3D. You may bring home hot new 3D-enhanced titles such as LONGBOW 2 or QUAKE II only to find that they run in pixelated, jerky 2D mode on your state-of-the-art All-in-Wonder 2 3D card. Or your new flight sim can't figure out that your fancy 3D card uses AGP to store texture graphics in your computer's main memory, so it limits you to a blocky 512x384 resolution instead of the smooth 800x600 the card can actually produce. Add driver-compatibility headaches that give old-time DOS game fans a frightening sense of déjà vu and make new gamers wonder if they understood the meaning of "plug and play," and you begin to realize that all is not yet well in 3D-ville.

So why can 3D be such a pain? When will it become headache-free? What kinds of amazing effects can we expect in future 3D games? Will tomorrow's hardware really make today's displays look like yesterday's EGA graphics? To find out, *CGW* talked to a number of leading-edge developers in the simulation and action game fields, as well as hardware producers and the people behind the programming interfaces that make the cards work. So pay close attention to that man behind the curtain…

ILLUSTRATIONS BY TODD DAMAN

Off to See the Wizards

Most of the 3D-related difficulties that face both gamers and developers boil down to standards. There's an old adage popular among programmers: "The great thing about standards is that there are so many to choose from." With 3D games, problems come from not only the number of available standards, but also the different takes that various hardware developers have on these standards. Today the majority of games are programmed for Direct3D, the so-called universal standard; for OpenGL, a standard that originated on workstation-level computers and is now popular in games based on the QUAKE engines; or Glide, designed specifically for the 3Dfx Voodoo chips. (In some cases, games are programmed for both Glide and Direct3D.)

But in the beginning, there were no standards. Microsoft had announced that it was working on supporting 3D in Windows 95 through its coming Direct3D, but the hardware and games were ready long before Direct3D was. So, various card makers developed their own 3D APIs (Application Programming Interfaces). The most notable of these was the Glide API for the 3Dfx Voodoo chipset.

"Glide emerged when there was no Direct3D," says Andy Keane, vice president of marketing for 3Dfx. "It was the only thing out there. Its origins were in the arcade market." However, Glide isn't

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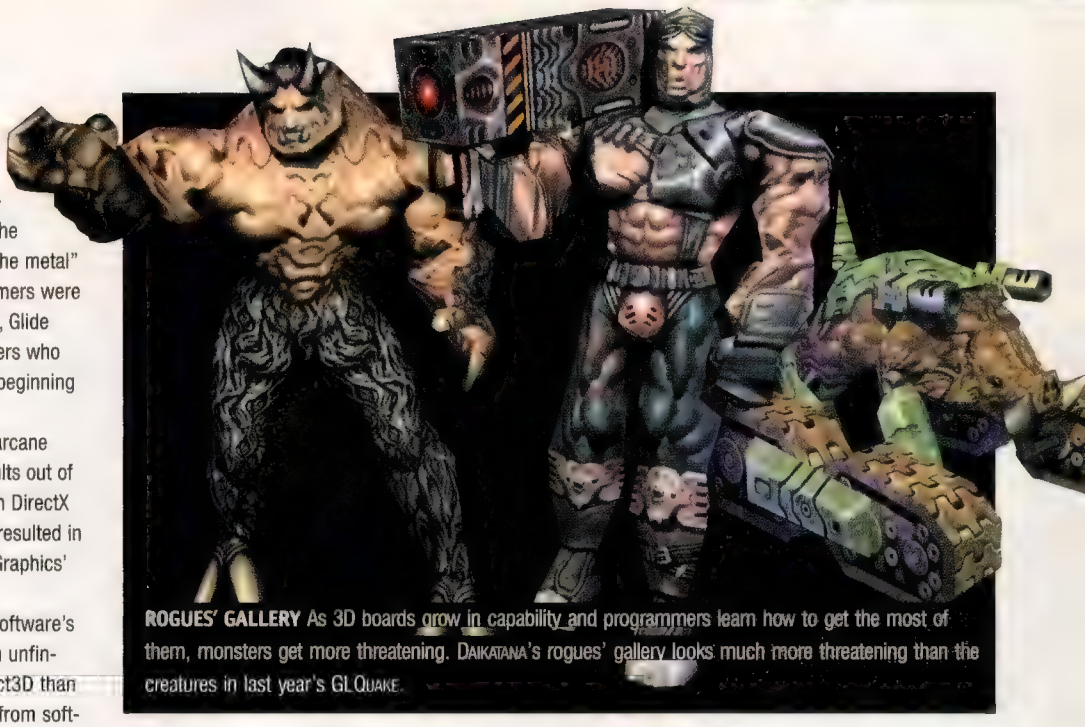
really an API in the traditional sense; it doesn't provide sophisticated functions such as you'd find in Direct3D. Instead, it's a "chip in software," giving programmers an interface to draw things using the Voodoo chipset. Because this "down to the metal" method was very close to how programmers were accustomed to writing graphics routines, Glide quickly became popular with programmers who were converting 2D-only programs and beginning to develop new games.

Glide's popularity wasn't hurt by the arcane techniques necessary to get decent results out of the version of Direct3D that shipped with DirectX 3.0. In fact, it was this poor design that resulted in the adoption of yet another API, Silicon Graphics' OpenGL, for the 3D version of QUAKE.

"DirectX 3.0 was horrible," says id Software's John Carmack. "I spent longer doing an unfinished port of the GL QUAKE code to Direct3D than it took me to do the original port to GL from software rendering.

"DirectX 5.0 has improved things quite a bit," Carmack adds, "and DirectX 6.0 will simplify yet more things with automatic texture management."

Still, Carmack remains a proponent of OpenGL. "OpenGL is the usability target that D3D is shooting for," Carmack says. "I am more productive and more innovative working in OpenGL on NT than in D3D on [Windows] 95."



ROGUES' GALLERY As 3D boards grow in capability and programmers learn how to get the most of them, monsters get more threatening. DAIKATANA's rogues' gallery looks much more threatening than the creatures in last year's GLQUAKE.

Performance Anxiety

Developers haven't standardized on Direct3D in part because of the capabilities of the other APIs. Many developers find OpenGL more usable, while others find Glide lets them use familiar programming techniques. But there's another reason: Although Direct3D is a "universal" API that can support all graphics cards, all graphics cards don't have the same feature set, and there are even graphics cards that "lie" to programs about what capabilities they do have in order to score better on benchmarks. The result is that despite Direct3D's universality, developers must still test on virtually every kind of 3D card unless they want to be restricted to a very limited subset of features shared by all cards.

"Direct3D is universal in the sense that every consumer 3D card has D3D drivers, but that's about as far as it goes," says Doug Kubel, vice president of technology for Interactive Magic. The company found out just how varied driver support was when it released iF-22, one of the first flight sims to take advantage of Direct3D. "From the start, you need to spend a good deal of time just keeping up with the newest cards, and even more testing with all the latest drivers," Kubel explains. "The amount of time you spend supporting specific cards depends on how well you want to support them; perhaps you could spend as little as

AGP: Will It Help?

Most new Pentium II systems ship with an AGP (Advanced Graphics Port) expansion slot in addition to PCI slots. AGP allows your computer to send data to your graphics card more quickly and lets chips store textures in your computer's main memory.

"Right now, AGP's main benefit is that it lifts texture limitations," says id Software's John Carmack. "Texture management can be a significant performance issue on cards with only 2 megs of texture memory. Texturing directly from AGP memory can make that limitation disappear, or AGP can just be used as a double (or quad) speed PCI bus to make the texture download to the card faster."

When graphics chips get faster, AGP will make for even greater benefits, Carmack says. "In the future, AGP's largest benefit will be in providing the command bandwidth necessary to get millions of triangles a second out of real-world applications."

Still, AGP is no panacea to 3D's current ills, say FIGHTER DUEL 2 developers Matt Shaw and Theodore Jump. "We sincerely doubt that single technologies like AGP will solve many of the current headaches, even as they do help with some problems. We, as developers, and all of us as users need to keep in mind that 3D video technology at consumer levels is still fairly new and will take a while to mature properly."

INCOMING! Rage Software's INCOMING is one of the first action games to take advantage of the detailed textures available on AGP machines.

FOX TWO Dynamic lighting and alpha blending effects make for dramatic lens flares and semi-transparent smoke trails.

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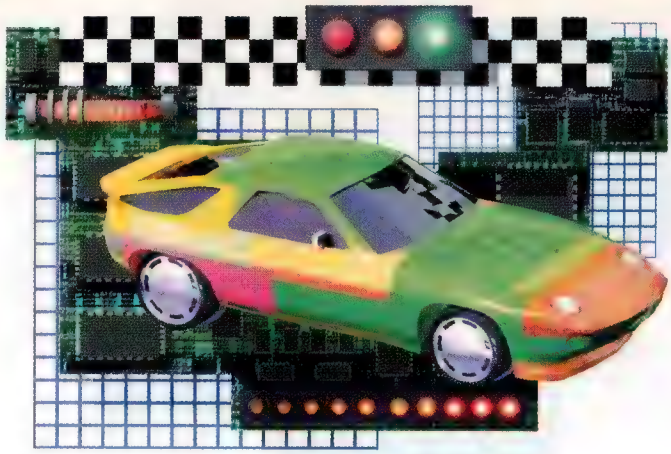
10 percent of your graphics development resources, but you won't get a result that will take advantage of what everyone has to offer. Even worse, between the limitations of the interface and the implementation of some drivers, it simply isn't possible to build a truly hardware-independent version of an application using D3D. We've had to work hard to make the new release of iF-22 and our upcoming iF/A-18E Carrier Strike Fighter take the best advantage of D3D."

Paul Dunscombe is responsible for 3D support at Rowan Software, the developers of Flying Corps Gold and the upcoming MiG Alley. "Although D3D is thought of as a universal API, no two 3D cards support exactly the same feature set," Dunscombe explains. "This means that even though only one version of the code needs to be written, it does need to cope with the fact that some features may be missing or supported in a different way. Each time a new feature is used, we need to consider how the software will look if the feature is not present. Provided that some care is taken over this, there is no reason why a good 'generic' Direct3D version cannot be produced. The only coding that we hope we will need to do in the future is to support new features as they become available in hardware. This support will still be through the Direct3D interface and so cannot really be called 'card specific.'"



Eidos' Bryan Walker, who's overseeing the development of Flying Nightmares 2, Confirmed Kill, and Team Apache, takes a different approach. "We're supporting Direct3D, Rendition's RRedline, 3Dfx's Glide, NEC's SGL, and ATI's Rage APIs," Walker says. "We prefer to develop native drivers as much as possible for our simulations, since they provide better frame rates on most hardware and allow us to really increase the content quality as a result. We'll use D3D on some cards if we have to due to time constraints or developer-support issues, but our goal is to do the best we possibly can, and that's usually not by relying on generic APIs."

This mix of supported features in various Direct3D drivers requires so much testing that it can really stretch out development time. Scott Randolph, a senior 3D graphics engineer at MicroProse who is working on Falcon 4.0, says that the development team got a Glide driver up and running in a week and then tweaked it for another month or so.

"On the other hand," Randolph says, "we had a Direct3D driver functional in about a month, and it still isn't working on all hardware. For instance, on 3D Labs chips only *some* textures get dark at night; on Intel's i740, *none* get dark at night. We're hoping we can find some way that works for everyone."

The varied performance of different cards presents another major problem, says Kevin Wasserman, a 3D programmer at Looking Glass. "Performance is very uneven, both between different chipsets and between different drivers for the same chipset," he explains. "Sadly, there are a lot of cards and drivers out there that provide only hardware 'deceleration'; especially, in our case, drivers that don't provide native DrawPrimitive support. Hopefully, this will improve over time."

STANG STING Fighter Duel included almost no land in its scenery in an effort to keep frame rates up; with 3D card support, Fighter Duel 2 has no such restrictions.

The Death of 2D

So how long will it be until all games are 3D-enhanced? Developers differ in their opinions, but most agree that the day is coming—and that it will come sooner for some genres than others.

Bryan Walker of Eidos feels the end is near for 2D-card support in flight sims. "This summer should see the last of the unaccelerated flight-simulation releases from Eidos and most other manufacturers."

James Fleming, lead programmer for Looking Glass' Flight Unlimited II, sees the change coming soon for his company. "We plan to ship Flight Combat, our upcoming World War II combat sim, as a 3D hardware–only game. And that's about two years away," he says. "Our next flight sim, Flight Unlimited III, slated for 12 months from now, will still support 2D-only cards."

Lorin Jameson, lead 3D programmer for Kesmai's Air Warrior III, projects a similar timetable. "I doubt many games currently in development planning now will try to do both anymore," he says. "There is just so much you can do with 3D acceleration that cannot be attempted in a software system that it will make the development too complicated to try to do both. I suspect we'll see the end of the software-only renderer in the coming year."

While the death of 2D seems imminent for sims and action games, 3D is only just now coming into other genres. For instance, the developers of MGM Interactive's Wargames, which follows Myth as one of the first strategy games with 3D hardware support, see 2D support as being important for some time to come.

SHALL WE PLAY? Wargames will be one of the first strategy games to support 3D cards, but the importance of the European market means that the developers are optimizing 2D card support as well.

"I think we're a year or more off from going all-3D in America," says Rob Alvey, Wargames' producer, "but at least another two to three years off for the rest of the world." That's because Europe and other markets are generally further behind the performance curve. Alvey says that it was only by Christmas that developers could rely on gamers having even Windows 95.

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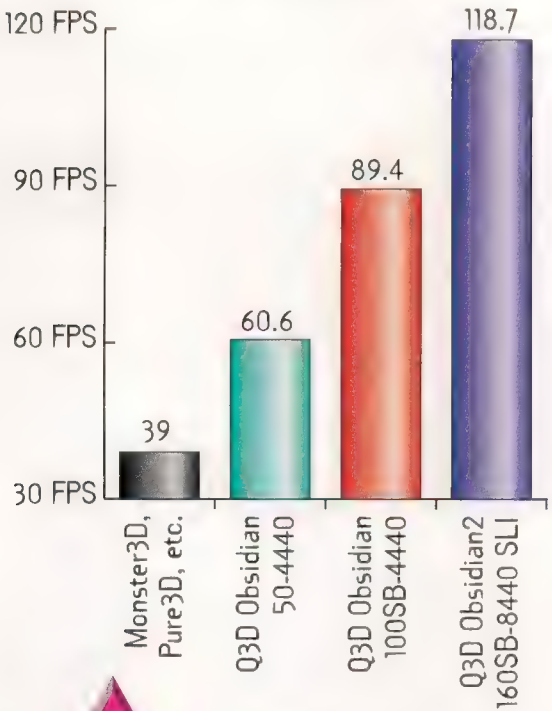

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The 60FPS Question

Up to this point, the biggest selling point for 3D hardware has been increased frame-rate, which eliminates jerky screen updates in action games and simulations. Smooth screen motion—30fps (frames per second) or above—does as much or more than detailed graphics to make a game environment feel realistic.

Mike Hara, director of marketing for nVidia, sees a point in the near future when the major 3D chips will all perform at the optimal 60fps. At that point, there's no reason to go faster. Pointing to some of the 3Dfx Voodoo2 demos, Hara says, "Fifteen frames per second on Voodoo2 isn't interesting to anybody. Tap into these tremendous fill rates and jack up the quality."

And while many benchmarks measure triangles per second, Hara says higher resolutions and better image quality will be the features that set boards apart in the future. "Enabling better texture quality, along with the use of alpha blending [in essence, transparency] and Z-buffer, will have a more dramatic effect than more triangles," he says. "And 800x600 resolution can really help image quality."

SUPER RAPTOR As 3D programmers grow more experienced and the boards improve, games will grow more detailed; the jets in the coming updated iF-22 exhibit much more detail than those in the original.

Bryan Pritchard, who is currently working on art for Ion Storm's DAIKATANA, looks forward to this increased power. His biggest wish for the future? "I'm anxious to be able to use more polygons to make characters even more realistic, and have larger textures with more pixel depth."

Constantine Hantzopoulos, project director for FLIGHT UNLIMITED II, is excited about the possibility of taking the graphics load off the processor. "We'll be able to focus much more on design and immersive gameplay," he says. "Gone will be the 2D cockpits of yore—cockpits will now be fully realized in 3D without slowdown, adding to the immersive factor. Putting loads of planes in the air, on the order of 50 or more, having flak and transparent smoke, explosions, massive aerial dogfighting and bombing—we can push the polys, especially given the fact that the minimum requirements for FLIGHT COMBAT [their upcoming sim] will probably be a Pentium II/266 with 3D hardware. This is exciting: It allows us to venture down design avenues that have been closed to us in the past due to technical constraints."

There are still bumps ahead on the 3D road, but one thing everyone agrees on is that the results will be worth the pain. It's clear from talking to both hardware and software developers that, as far as 3D capabilities go, we ain't seen nothin' yet.

The Future of APIs

3Dfx isn't the only company to provide a custom API to developers: Rendition, ATI, NEC/Videologic, and others have as well; but Glide has proven the most popular. One company that hasn't done a custom API is nVidia. Instead, the company's RIVA 128 chipset was designed specifically to be fully compliant with the Direct3D feature set; the company should also have an OpenGL driver available by the time you read this. "Proprietary APIs don't move the industry together as a group," says nVidia's Mike Hara. He acknowledges that Direct3D has caused developers some headaches because of unimplemented features, but seems optimistic that such problems could soon be a thing of the past.

"In 1998, given the level of deep submicron silicon that we're getting access to, I don't think there's any excuse for a 3D processor not to support the full Direct3D feature specification," Hara says. "We want to get to the point where developers can look at the Direct3D spec and program to it."

Although 3Dfx continues to support its Glide API, it doesn't push it in favor of Direct3D. "We're a big D3D proponent," says 3Dfx's Andy Keane. "We have probably five times the resources on D3D than on Glide."

One level of confusion may disappear in a couple of years. Microsoft and Silicon Graphics have announced that the capabilities of Direct3D and OpenGL will eventually be merged into a single API called Fahrenheit. Most developers are taking a wait-and-see attitude toward Fahrenheit, and not everyone thinks a single standard is necessarily a good thing. Neil Soane, producer of SSI's SU-27 FLANKER 2.0, says, "It will be interesting to see where this ends up. I firmly believe that it is always better to have competitive standards, as this pushes the industry along and gives us software manufacturers a goal to aim for. I would hate to think that we end up with a single 3D standard. Then we'd be at the mercy of the controlling company as to what will be achieved. This would not be good for the 3D games market in general."

DEADLY COBRA SU-27 FLANKER 2.0 is one of the only announced OpenGL games that's not based on the QUAKE engine.

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Part 2: The *Hard* Choice

How to Make the Right Decision When Buying a 3D Graphics Card

by Loyd Case

Keeping your PC's hardware on the bleeding edge of technology is expensive and confusing. It seems as if every year there is a new piece of hardware that becomes a necessity if you want to get the most out of the latest games.

Well, this year that new hardware is the 3D card. If you don't have 3D hardware in your PC yet, you're not seeing many of the newest games in all their glory. Choosing a 3D card isn't easy. Your choice will depend on many factors, not the least of which is deciding which games you want to play. But with all the 3D cards out there, and the confusion regarding different kinds of 3D software support—such as Direct3D, Glide, and OpenGL—how do you make the jump into the world of 3D without buying the wrong equipment?

Well, this article will help you figure it all out. This is not another article explaining arcane 3D terms; that's been done already. Instead, let's take a look at 3D cards from the perspective of the puzzled buyer. As I can attest from the volume of email *CGW* gets on the subject, choosing the right card for your needs is a tough challenge. Read on and you'll find out why you want a 3D card, and what you should look for to make certain that the hardware you buy supports your favorite games.

Why 3D?

Without 3D card support, many games run smoothly only on computers with very fast processors. This is because displaying a three-dimensional world in the confines of your 2D monitor requires a tremendous number of mathematical calculations. Of the calculations needed to display 3D graphics, the most intensive is the final rendering—for example, turning those mathematical calculations of space and time into a picture on your screen that changes 15 or more times per second. When you add those calculations to the math required for basic gameplay—artificial intelligence, tracking enemies, playing music, reading a joystick, and the like—you end up with a daunting set of tasks for even the fastest processor.

A good 3D accelerator card can take much of the burden of rendering the 3D game world from your processor. Its specialized hardware handles the tasks of placing objects on the screen, which leaves your processor more time for its other tasks and results in smoother gameplay. Games that support 3D cards (adding a 3D accelerator won't do a thing for old games that predate 3D hardware) will generally run much faster if you have a 3D card in your system.

HIGH VELOCITY Cards based on the RIVA 128 chip can hold their own against 3Dfx-based cards, but they won't run Glide games.

How much faster? Let's take QUAKE as an example. On a 200MHz Pentium system with a decent 2D graphics card, you can get DOS QUAKE to run, at best, around 16–17 frames per second at 640x480 pixels resolution. Now, if you add a graphics accelerator with a 3Dfx chip, such as the Canopus Pure3D, that number kicks up to 28 frames per second (or better) at the same resolution. In DOS QUAKE, all of the graphics are handled by QUAKE itself, and the 2D card is just a "dumb frame buffer," meaning that all it does is display the final image.

However, the 3D accelerated version of QUAKE (known as GL QUAKE) uses OpenGL. OpenGL is one standard way of writing 3D software (more on this later). You can run GL QUAKE on the most recent releases of Windows 95 (OSR2 and later) using Windows' own software OpenGL driver, but it would be painfully slow because it doesn't use the 3D hardware in your system. To solve this problem, 3Dfx has written a driver that translates the OpenGL software instructions generated by GL QUAKE into hardware instructions used by the 3Dfx chipset. The result is much faster performance. Similar "mini-GL" or "QUAKE GL" drivers are starting to show up for other graphics cards. Drivers that are fully compliant with OpenGL and offer the ability to actually customize OpenGL (to a limited extent) are expected for most graphics cards this year. (You'll see the full drivers referred to as "ICDs," short for installable client driver.)

Then there's the issue of image quality. Without going into the technical jargon, 3D games look much better and more realistic using hardware acceleration. Most of the latest generation of graphics hardware can now turn on these image-enhancement features with relatively little sacrifice in performance. The improvement in the quality of the graphics can be quite remarkable. If you've ever seen LONGBOW 2 in its full, hardware-accelerated 3D glory, going back to software-only 3D is almost painful.

In addition to making things look better, good 3D hardware allows for special effects that would be far too costly in terms of processor horsepower for even a 333MHz Pentium II to render. For example, QUAKE II makes heavy use of colored lighting and shadows. These tricks are performed by blending multiple texture maps (bitmaps) together (using the hardware to perform the blending). This is a snap for a good 3D accelerator to handle, but it would slow a 3D-less system to a crawl.

The bottom line is that 3D accelerators can significantly enhance the gaming experience by increasing the frame rate at which the game plays and creating a more realistic virtual world.

Non-Standard Standards

Okay, now you're sold on the idea of buying a 3D accelerator. Which one to buy?

Here's where it gets difficult, because various games support a number of different, incompatible 3D standards, and you'll want to make sure to get a card that supports the standards used by the games you like to play.

The various 3D standards are based on different 3D APIs (Application Programming Interfaces), the software layer that programmers use to tell the 3D accelerator hardware what to do. There are three prevalent APIs, and a couple of somewhat common ones. Many cards support more than one of these. The three APIs that are most common are Microsoft's Direct3D, OpenGL (originally developed by Silicon Graphics), and Glide, the proprietary API that exclusively supports hardware using 3Dfx graphics chips.

Direct3D games have been slow in coming, but are now beginning to increase in number. Early versions were poorly documented and performed poorly, as well. Direct3D became usable with only DirectX 3.0. DirectX 5.0 supplied better documentation and performance.

All AGP Cards Aren't Created Equal

PCI slots haven't caused many problems for graphics card purchasers. For the most part, you buy a PCI graphics card, plug it in, and it works. AGP is different—and more complicated. The AGP bus runs at 66MHz. It stores 3D texture maps in main memory, called AGP texturing. Here, only the amount of texture needed is downloaded over the bus, not the entire texture. Then there's full AGP support, which includes 2x sideband addressing and address demultiplexing, which can double the amount of data that can be passed to the card from 256MB per second (66MHz) to 528MB per second (133MHz).

Part of the blame for AGP confusion lies with Intel, for not taking a stand on AGP features. Basically, any chip that can run on an AGP bus—whether it takes advantage of AGP features or not—can be called "AGP compliant." So if you're in the market for an AGP card, choose carefully. Here are some guidelines. Also, check our handy chart on page 88 for AGP feature support.

Several graphics chips use the AGP bus as a sort of glorified PCI bus. They don't allow textures to be stored in main memory (AGP texturing) or take advantage of address multiplexing or sideband support. I've labeled these AGP 1x-only cards, but another term you might see is "AGP lite." These aren't necessarily bad cards, but if you get one, make sure you get 8MB of RAM. Chips that are AGP 1x-only include the Number Nine Ticket-to-Ride, Rendition V2100/V2200, and Voodoo2.

Then there are those cards that add AGP texturing to AGP 1x speed. These still transfer data at 66MHz, but allow for off-card texture storage. These include the RIVA 128 and Permedia 2. Finally, there are cards that fully implement the AGP spec. These cards include the Intel 740 and ATI Rage Pro.

For All Gamers

Some of you wargame and strategy game grognards are probably scratching your heads and thinking, "So, what's in it for me?" Well, it's inevitable that some wargames and strategy games will make extensive use of 3D graphics. We've already had a taste of this with the turn-based, tactical combat game INCUBATION, which can use a 3Dfx accelerator. MYTH, the real-time tactical combat game from Bungie, also makes heavy use of 3D acceleration. You only have to look at the TalonSoft games to realize that 3D graphics could enhance those types of games as well. 3D will eventually permeate all genres of gaming.

ILLUSTRATIONS BY TODD DAMAN. PHOTOS BY MICHAEL FALCONER

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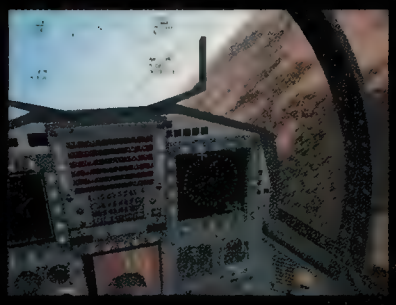
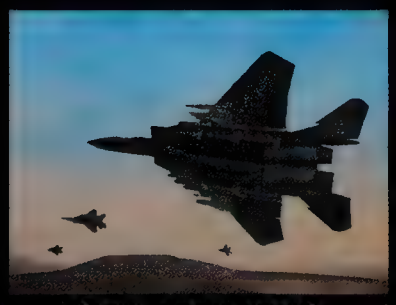
F-15

THE DEFINITIVE JET COMBAT SIMULATOR





[ACTUAL GAMEPLAY SCREENS]

WHEN WE ASKED VETERAN F-15 PILOTS TO PUT JANE'S F-15 TO THE ULTIMATE TEST, THEY WERE A BIT SKEPTICAL. BUT THEY WEREN'T PREPARED FOR JANE'S OBSESSIVE ATTENTION TO DETAIL—A FLIGHT MODEL BASED ON ACTUAL USAF DATA, INNOVATIVE POINT-AND-CLICK COCKPIT INTERFACE, SMART BOMB CAMERAS, CASCADING TRACER FIRE AND MORE THAN FIFTY ACCURATE WEAPONS. "REAL" WASN'T THE ONLY FOUR-LETTER WORD THEY USED. JUST THE MOST FREQUENT.

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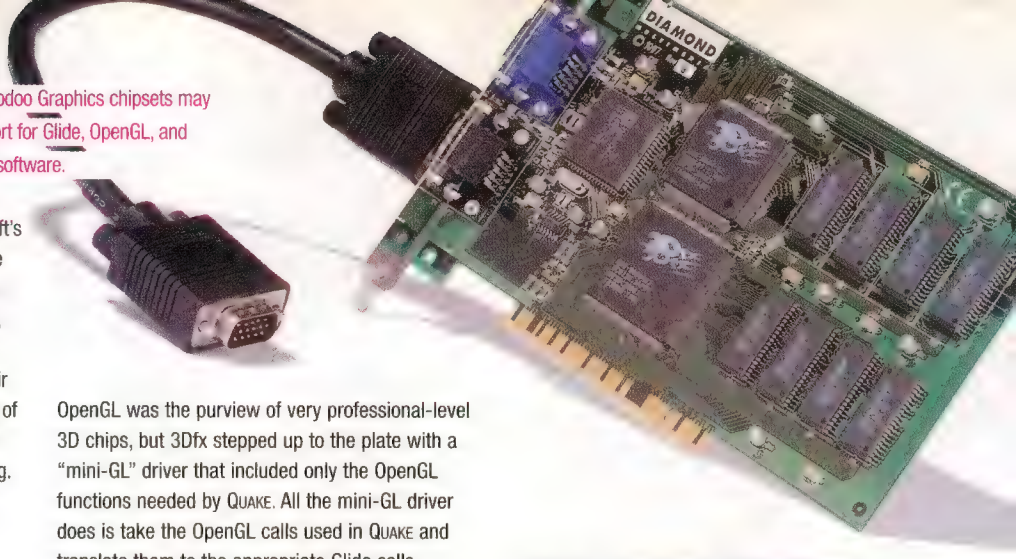


FAST AND FRIENDLY Cards based on the 3Dfx Voodoo Graphics chipsets may not be the absolute fastest out there, but with support for Glide, OpenGL, and Direct3D, they allow you to run the widest range of software.

During the interim, 3Dfx stole some of Microsoft's thunder by evangelizing its own 3D API, Glide. The performance of the 3Dfx Voodoo Graphics chipset was well ahead of any other 3D chips at the time, so quite a number of 3D game developers were attracted to the chips because they could use their power to show off the developers' games. On top of that, Glide is a "thin" API, which primarily handles rendering chores instead of trying to do everything. This allows 3D programmers to continue to work with whatever 3D methods they prefer.

Meanwhile, the boys at id Software turned a cold shoulder to Microsoft and picked OpenGL to add hardware acceleration support to the QUAKE engine. At first, it seemed somewhat quixotic, since OpenGL was the purview of very professional-level 3D chips, but 3Dfx stepped up to the plate with a "mini-GL" driver that included only the OpenGL functions needed by QUAKE. All the mini-GL driver does is take the OpenGL calls used in QUAKE and translate them to the appropriate Glide calls.

At the same time, NEC and Rendition were out beating the drum for their respective proprietary APIs. All of this has resulted in an enormous amount of confusion among the buying public.

Until the market settles on a single 3D API, you'll need to look at the games you want to play, consider which APIs they use for 3D, and then buy a 3D card based on this information. Be sure to check out the chart elsewhere in this feature that details which APIs are supported by which popular games.

CGW ON-LINE To get an up-to-the-minute list of the hottest graphics cards, check out Loyd Case's ***Ultimate Game Machine*** feature at **www.gamespot.com**.

CPU Speed Matters

Designing and producing a graphics chip takes time. The record time to market for a new chip probably goes to nVidia's RIVA 128—the chip went from inception to production in around nine months. Chip designers have to use their crystal balls and decide which kinds of systems the people using their cards will have. Bear in mind that most graphics cards and chips sold go into new systems by big PC manufacturers, not into boxes

Top Ten 3D Misconceptions

1. A 3D accelerator will speed up all of my 3D games.
Not necessarily. First, the game has to be written to take advantage of a 3D accelerator. Second, some of the first-generation 3D "accelerators" actually ran more slowly than if the game had simply used the software renderer.

2. The box says "3Dfx," but the game won't run in accelerated mode on my card!
If a box has the 3Dfx logo on it, it may be designed *specifically* for cards based on the 3Dfx Voodoo/Voodoo Rush chips, or it may be a Direct3D game that runs on all brands of 3D cards. Check the system requirements fine print carefully to see if your card is supported—you can't rely on the logo.

3. An AGP graphics card will run faster than a PCI card.
Again, not necessarily. Some AGP cards are really just glorified PCI cards. Unless the card supports some of the advanced AGP features (such as AGP textures), you'll see very little benefit over a PCI card.

4. An AGP Voodoo2 will blow everything else away.
Maybe, maybe not. It probably won't run any faster than a PCI Voodoo2. 3Dfx has stated that the PCI bus is not a performance bottleneck. On top of that, the Voodoo2 is an "AGP lite" chip, meaning it doesn't support any advanced AGP features, just the 66MHz bus. And, you'll lose the ability to add a pair of Voodoo2's to double performance—both have to be PCI cards. It's far better to get an advanced AGP 2D/3D card and a Voodoo2—or maybe a pair of Voodoo2's.

5. I'd like to upgrade to AGP, but buying another graphics card will stretch my budget, since I'd have to throw away my PCI graphics card.
No, you don't. Assuming your AGP motherboard has enough slots, your PCI graphics card will work just fine in it. Then you can sit back, wait for the dust to settle a bit, and pick the AGP card that's right for you.

6. 3D is useless. I bought one of the highly rated 3D cards, and my 3D games don't run any faster and look just the same.
You probably didn't enable 3D acceleration in the game. Most games still default to software rendering, and you actually have to tell the game's setup or preferences boxes to turn on 3D acceleration.

7. It seems if I want a Windows 3D card I have to get a combination 2D/3D card, and if I want to run DOS-based 3D, an add-on card would be sufficient. Is there an answer for me that will not compromise the power of my existing card?
Most games don't run 3D in a Window—they run full screen. So you don't have to give up your hotrod 2D card, especially if you use it for high-end graphics. Just get an add-on accelerator, like a 3Dfx Voodoo Graphics card.

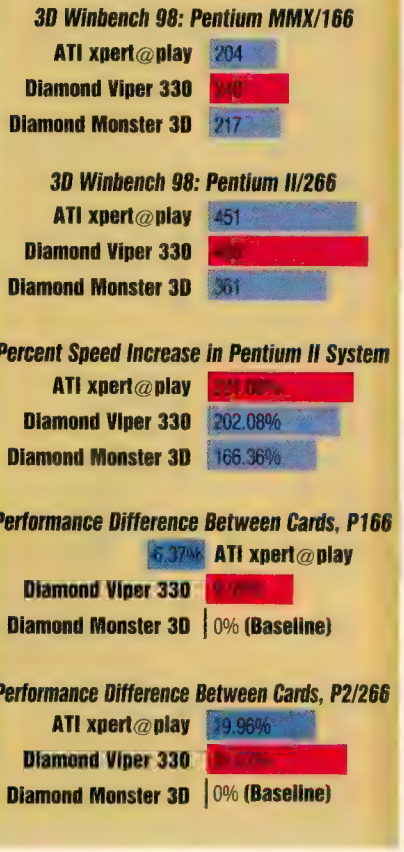
8. I only play strategy and adventure games, so I don't need a 3D card.
Guess again. Some point-of-view adventure games have started adding 3D accelerator support. There are already two strategy games—MYTH and INCUBATION—that support 3D acceleration.

9. According to all the computer magazines, AGP is totally useless and is no better than PCI.
Most computer magazines focus on "productivity" applications, which are generally all 2D based. AGP won't help much with 2D work. AGP begins to come into its own only with games that have huge textures and that understand AGP.

10. I can only buy a 3Dfx card because I want to play QUAKE and QUAKE II.
I'm sure the boys at id would take exception to calling QUAKE II a 3Dfx game. QUAKE II uses OpenGL for its 3D acceleration; 3Dfx happened to be the first one out with a "mini-GL" driver for GL QUAKE. There are indeed games that support only 3Dfx, but there are also some very good Direct3d games. Also, OpenGL is now a viable option now that Microsoft and SGI have kissed and made up.

CPU Speed Matters

Some new graphics cards are hot performers in speedy Pentium II rigs, but can't match last year's 3Dfx in your trusty Pentium 166. We took three graphics cards and tested them in the PCI slots of a P166MMX and a P2/266 to gauge their performance in each system.



on store shelves. Naturally, a chip designed last year would want to target the AGP bus and the Intel Pentium II. Of course, the operating system would either be Windows 95 or Windows NT.

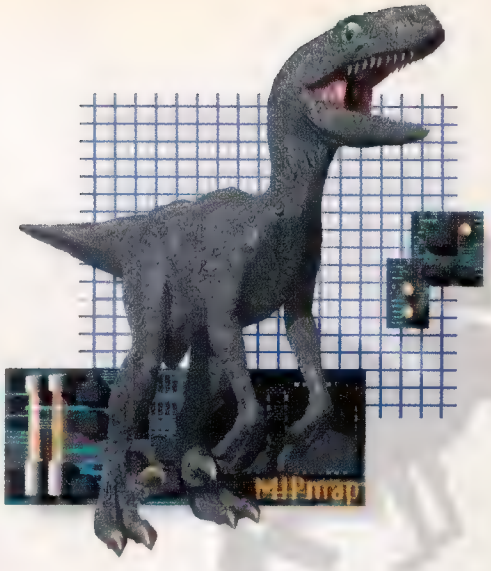
There's an interesting side effect to this necessity. Owners of existing mid-range Pentium systems may find out that the latest hot chip doesn't do so well on their rig. The RIVA 128 and ATI's new Rage Pro are good examples. Both do very well on Pentium II AGP systems. Pop a PCI version into a Pentium 100, and you'll wonder what all the fuss is about. Using 3D WinBench as our measure, the newer chips run a lot faster than a 3Dfx accelerator (such as the Monster 3D) on a 266MHz Pentium II. On the other hand, the RIVA will actually run 3D WinBench 98 slower than a 3Dfx card on a Pentium 120. The one exception to the rule seems to be the Rendition V2200 chip, which has a very even performance curve.

This means that the graphics card you might choose for a new, AGP-based system would be different than the one you'd get to upgrade an existing PCI-based Pentium system. While the ATI All-in-Wonder Pro might beat out a Monster 3D in your new 300-MHz AGP Pentium II system, it will be a distant second in a Pentium 166 PCI box.

The Right Choice

So what do you buy? As in that old classic boardgame, Clue, there's more than one solution to this mystery. Let's break it down a bit.

If you're unable to upgrade your entire computer, you can still get noticeable results by adding a current generation 3D accelerator. There are a lot of choices, but if you have anything slower than a Pentium 200, the choice becomes a little easier. The first thing to do is to get an add-on card based



on the 3Dfx Voodoo Graphics chipset, which works in conjunction with the 2D card already in your system. Unless your primary graphics card is truly awful, this is your best bet—and could even delay that much dreaded system upgrade for a few more months. Later, you can add a low-cost, 2D/3D accelerator. My current favorite 3Dfx accelerator is the Canopus Pure3D.

If you do want to get a 2D/3D card, then take a good look at the Rendition V2100- or V2200-based accelerators. They offer balanced performance on a wide variety of systems and are the only good bet if you're on a very tight budget and need to find a card that sells for $100 or less.

If you have a very fast system—say, a 233MHz Pentium MMX or a 200MHz Pentium Pro—a 3Dfx add-on card is probably still the first option to consider. But some interesting options open up, particularly if you want to do 3D in a window (for example, VRML on the Web or MICROSOFT FLIGHT SIMULATOR 98). The RIVA 128 and ATI Rage Pro begin to shine at CPU speeds of 200MHz or faster. The RIVA is somewhat faster than the Rage Pro cards, but the

BEFORE AND AFTER Without 3D support, note HEAVY GEAR's blocky terrain and odd-looking, dithered sky. Add a 3D card and notice how the sky and ground smooth out. And, most importantly, a faster frame rate makes the game much more immersive.

Sinners beware, the purification is near ...

LIGHT and DARKNESS
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ENVY

ENVY

Envy is the fifth deadly sin. To envy is to covet, begrudge, be jealous or otherwise resent the good fortune and success of another. Envy lies at the root of many violent crimes.

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Interplay
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Interplay

Of LIGHT and DARKNESS™

the prophecy

- Lightning Fast, Real-Time Adventure Game with Dramatic Multiple Endings
- 3D SGI Art by world famous artist Gil Bruvel; if game screens were paintings it would sell for over $10 million dollars
- Stunning 3DI 360 scrolling environment
- Absorbing level-based game created by Cliff Johnson, creator of Fools Errand
- Post-Apocalyptic soundtrack by the MF'ers
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Actual scenes from game

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3D image quality of the Rage Pro is slightly better. However, RIVA cards are dropping in price, and the performance is remarkable in Direct3D.

You'll notice that Voodoo Rush cards, such as the Intergraph Intense 3D, aren't in my mix. First, I'm not too happy about their 2D speed. Second, the 3D performance of the Rush can be up to 30 percent slower in games that simultaneously use alpha transparency and z-buffering (GL QUAKE comes to mind). And I've had endless problems setting up and configuring several different Voodoo Rush boards. Simply getting them to work correctly, across a variety of computer systems, keeps me awake at night.

The bottom line is this: For the best performance on a Pentium system and the widest range of software support, you should probably consider first purchasing a card based on the 3Dfx Voodoo chipset. Then look into getting a fast 2D/3D card if your budget allows. Note, however, that if you are planning a system upgrade in the next three to six months, hold off on that 2D/3D card. You'll want AGP in your new system, so that PCI combo card won't be a good investment. (But the PCI-based 3Dfx Voodoo card will carry over fine to the AGP system, since it's an add-on card rather than your primary video card.)

Which Cards Support Which Standards?

Graphics Card (3D Chip)	Direct3D	OpenGL (Windows 95)	Proprietary	AGP version & Support	Price	Manufacturer's Web Site
STB Velocity 128 (RIVA 128)	Yes	Yes	No	Yes[5,6]	$159	www.stb.com
Diamond Viper 330 (RIVA 128)	Yes	Yes	No	Yes[5,6]	$169	www.diamondmm.com
Diamond Stealth II (Rendition V2100)	Yes	Yes	Rendition Rredline	No	$ 99	www.diamondmm.com
Diamond Monster 3D (3Dfx Voodoo Graphics)	Yes	Yes[1]	GLIDE	No	$179	www.diamondmm.com
Diamond FireGL Pro (Permedia 2)	Yes	Yes	No	Yes[5,6]	$199	www.diamondmm.com
Canopus Total3D 128V (RIVA 128)	Yes	Yes	No	Yes[5,6]	$229	www.canopuscorp.com
Canopus Pure3D (3Dfx Voodoo Graphics)	Yes	Yes	GLIDE	No	$179	www.canopuscorp.com
Matrox M3D (PowerVR)	Yes	Yes[1]	PowerVR SGL	No	$ 99	www.matrox.com
ELSA Victory Erazor (RIVA 128)	Yes	Yes	No	Yes[5, 6]	$179	www.elsa.com
ELSA Winner Office 2000 (Permedia 2)	Yes	Yes	No	Yes[5,6]	$199	www.elsa.com
Hercules Stingray 128/3D (3Dfx Voodoo Rush)	Yes	Yes[1]	GLIDE[4]	No	$229	www.hercules.com
Hercules Dynamite 3D/GL (Permedia 2)	Yes	Yes	No	Yes[5,6]	$249	www.hercules.com
Hercules Thriller 3D (Rendition V2200)	Yes	Yes	Rendition Rredline	Yes[5]	$179 (4MB), $249 (8MB)	www.hercules.com
Creative Labs 3D Blaster Exxtreme (Permedia 2)	Yes	Yes	No	Yes[5,6]	$129 (4MB), $199 (8MB)	www.creativelabs.com
ASUS 3DExplorer (RIVA 128)	Yes	Yes	No	Yes[5,6]	$149	www.asus.com
Real3D Starfighter (Intel 740)	Yes	Yes	No	Yes[6,7]	$199	www.real3d.com
Videologic Apocalypse 3D/5D (PowerVR)	Yes	Yes[1]	PowerVR SGL	No	$229	www.videologic.com
Number Nine Revolution 3D (Ticket to Ride)	Yes	No	No	Yes[5]	$229	www.nine.com
Intergraph Intense 3D Voodoo (3Dfx Voodoo Rush)	Yes	Yes[1]	GLIDE[4]	No	$229	www.intergraph.com
Jaton Blaze 3D Ultimate (Trident)	Yes	No	No	No	$129	www.jato.com
Jazz Adrenaline Rush 3D (3Dfx Voodoo Rush)	Yes	Yes[1]	GLIDE[4]	No	$209	www.jazzmm.com
Jazz Outlaw 3D (Rendition V2200)	Yes	Yes	Rendition Rredline	Yes[5]	$199 (8MB)	www.jazzmm.com
Orchid Righteous 3D (3Dfx Voodoo Graphics)	Yes	Yes[1]	GLIDE	No	$149	www.orchid.com
ATI xpert@play / xpert@work (Rage Pro)	Yes	Yes[2]	Yes[3]	Yes[6,7]	$179 (4MB), $229 (8MB)	www.atitech.com
ATI All-in-Wonder Pro (Rage Pro)	Yes	Yes	Yes[3]	Yes[6,7]	$299 (4MB), $349 (8MB)	www.atitech.com
Quantum 3D Obsidian 50 and 100	Yes	Yes	GLIDE	None	$795 (Obsidian 100SB/4400)	www.quantum3d.com

General support by 3D accelerator chips

nVidia RIVA 128 / RIVA Turbo	Yes	Yes	No	Yes[5,6]	www.nvidia.com
3D Labs Permedia 2	Yes	Yes	No	Yes[5,6]	www.3dlabs.com
Rendition V2100/V2200	Yes	Yes	Rendition Rredline	Yes[5]	www.rendition.com
3Dfx Voodoo Graphics	Yes	Yes	GLIDE	No	www.3dfx.com
3Dfx Voodoo Rush	Yes	Yes	GLIDE[4]	No	www.3dfx.com
3Dfx Voodoo2	Yes	Yes	GLIDE[4]	Yes[5]	www.3dfx.com
ATI Rage Pro	Yes	Yes	Yes[3]	Yes[6,7]	www.atitech.com
Oak Warp 5	Yes	No	No	None	www.oaktech.com
Intel 740	Yes	Yes	No	Yes[6,7]	www.intel.com
Number Nine Ticket to Ride	Yes	No	No	Yes[5]	www.nine.com
NEC / Videologic PowerVR	Yes	Yes[1]	No	No	www.powervr.com

[1] Mini-GL, not a full OpenGL ICD.
[2] Pending.
[3] Only a few games support ATI directly.
[4] Some older games which used an early version of GLIDE may not run.
[5] "1x" means it's using the AGP bus only as a fast PCI bus.
[6] "AGP textures" means the chip/card can use main memory to store textures.
[7] 2x sideband addressing increases bandwidth.

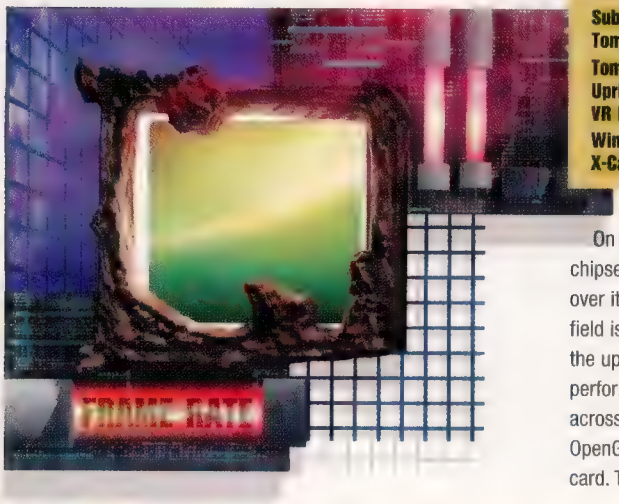
Equipping Your Hot New PC

Okay, so you're in the market for a new computer—or at least, you're considering a serious brain transplant by adding a new motherboard/CPU combination to your system. First, if you're just moving up to a Pentium MMX system to take advantage of plummeting CPU prices, follow our advice for an existing system: Get a 3Dfx-based add-on card. If you're also buying the primary 2D/3D card, consider a Rendition V2200 card (if you're getting a 200MHz or slower system).

What I'd really recommend, though, is to get a Pentium II system with an AGP graphics card. However, be aware that not all AGP cards are created equal (see the AGP sidebar). Some graphics cards can take full advantage of AGP's advanced features, whereas others simply use it as a somewhat faster PCI bus. This doesn't mean that an AGP card that doesn't store textures in AGP memory is a bad card—but it does mean you might want to get one with more memory on board. My picks include the ATI Rage Pro cards, the RIVA 128 cards, cards using the Intel 740, and the Rendition V2200 cards (but only if they're equipped with 8MB of RAM). If you do have to mix professional graphics work with your gaming, the Permedia 2 cards might work. Note, however, that most of these cards will work with Direct3D and OpenGL, but only 3Dfx cards will work with Glide games.

The 3Dfx Conundrum

If it seems as if the 3Dfx Voodoo chipset is getting the lion's share of recommendations here, there's a logical explanation. The company's Glide API has proven very popular in certain segments of the market, such as simulations and sports games. Because of 3Dfx's early technology lead and Microsoft's stumbles with Direct3D, many current 3D titles support only 3Dfx. Game developers didn't really have to rethink how they did their titles; they could just plug 3Dfx's Glide programming interface into their rendering engine. It gave them the ability to quickly port existing games.



API Support in Popular 3D Games

Game/Publisher	Direct3D	3Dfx Glide	OpenGL	None	Others
Air Warrior III Interactive Magic/Kesmai	X				
Armored Fist 2 NovaLogic				X	
Balance of Power LucasArts	X				
CART Precision Racing Microsoft	X				
Descent to Undermountain Interplay				X	
EF2000 2.0 Ocean/DID		X			Rendition
F/A-18: Korea Graphic Simulations Corp.		X			
F-22 Raptor NovaLogic				X	
F-22: ADF Ocean/DID	X	X			
Falcon 4.0 MicroProse	X	X			
Flight Simulator 98 Microsoft	X				
Flight Unlimited II Looking Glass	X				
Flying Corps Gold Empire	X				
Flying Nightmares 2 Eidos	X	X			Rendition
Forced Alliance Ripcord		X			
FPS Ski Racing Sierra		X			Rendition
Frogger Hasbro	X	X			
G-Police Psygnosis	X				
Half-Life Valve/Sierra			X		
Heavy Gear Activision	X				
Hexen 2 Activision			X		
iF-16 Interactive Magic				X	3Dfx Glide patch available
Interstate '76 Activision				X	Direct3D patch available
Jedi Knight LucasArts	X				
JetFighter III Plat. Ed. Mission Studios				X	
JSF Eidos		X			
Longbow 2 Jane's Combat Simulations		X			D3D patch available for RIVA 128
Myth Bungie		X			
NBA Live 98 EA Sports		X			
Need for Speed II SE EA		X			
NHL 98 EA Sports		X			
NHL Powerplay 98 Virgin	X				
Nightmare Creatures Activision	X				PowerVR
Populous III Bullfrog				X	
Pro Pilot Sierra				X	
Quake II id			X		
Red Baron 2 Sierra				X	3D patch coming midyear
Sabre Ace Virgin	X				
Shadows of the Empire LucasArts	X				
SIN Ritual/Activision			X		
SODA Off-Road Racing Sierra/Papyrus					Rendition only; 3Dfx patch in works
Su-27 Flanker Squad. Cdr. Ed. SSI			X		
Sub Culture Ubisoft	X	X			Rendition, PowerVR
Tomb Raider Eidos	X				Rendition, Mystique
Tomb Raider II Eidos	X				
Uprising 3DO	X	X			
VR Baseball Interplay		X			Rendition
Wing Commander Prophecy Origin		X			
X-Car Bethesda		X			

On top of that, the original Voodoo Graphics chipset had a commanding technology lead over its competitors. The technology playing field is showing signs of leveling a bit now, but the upcoming Voodoo2 chipset will regain that performance edge. If you want full support across the gamut of 3D games—Direct3D, OpenGL, and Glide—you need to get a 3Dfx card. The good news is that even if Glide eventually fades away as game programmers pick one of the standard APIs, you will still have a pretty fast card.

All isn't rosy, though. Some systems don't have free PCI slots. Unless you're willing to deal with the headaches and performance penalties of Voodoo Rush, then you're out of luck for Glide titles. A more minor point is that a 3Dfx add-on card only supports full-screen 3D. This

GRAND THEFT AUTO

"Okay, I admit it. I like to blow things up! It started with my baby sister's doll house, and well... it just went from there!"

"Stealing cars gives me a rush. In fact, stealing anything gives me a rush."

"Want some? Then get the job done right! I prefer sleek, fast cars with room in the back. Know what I mean!?"

Windows® 95 Compatible

PC CD-ROM

DMA Design Ltd.

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It's a crime.

"I dunno what's so special here. It's a game about everyday life, ain't it?"

"Using a flame thrower on a rival gang just gives me that warm and fuzzy feeling all over."

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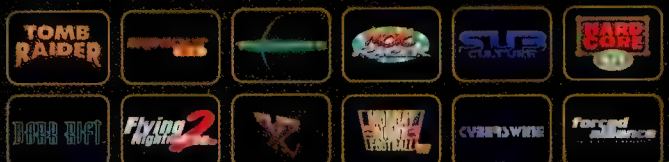

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means if you're a FLIGHT SIMULATOR 98 aficionado, you probably want a fast 2D/3D combination card. Wargamers should sit up and take notice, too, because it's very likely that 3D wargame titles will want to do their 3D in a window—but that's just a guess on my part.

To make things even more confusing, some games that have the 3Dfx logo on the box in fact support both Glide and Direct3D. DID's F-22 ADF is one example. Other games with the 3Dfx logo use only Direct3D—but have only been tested with 3Dfx. So the safe bet for a hard-core gamer is to get a 3Dfx card to put alongside whatever other graphics card you have. And, yes, a 3Dfx card will coexist very nicely with an AGP graphics card.

If you're picking up a hot new AGP rig with a 333Mhz Pentium II, you might want to budget for one of the soon-to-ship cards based on the 3Dfx Voodoo2 chipset.

Loyd's Picks

Here's a quick rundown of the bottom line. Gamers looking to upgrade existing computers with 3D capability should first look into adding a 3Dfx card, such as the Canopus Pure3D, Diamond Monster 3D, or others. Pick one of the add-on cards, not a Voodoo Rush card if you can help it. Then, look into upgrading your primary card. Pick a card that scales well with your CPU speed.

People buying new systems should try to budget for a fast AGP system—but don't forget to budget for 3Dfx as well, unless you're confident you won't be running titles which support only 3Dfx cards. This holds true for most game genres, including action games, sports games, and flight sims. Eventually, the confusion will die down as the next-generation games support one of the standard 3D programming methods, and perhaps we'll see a time when you'll need only one graphics card in your system, and adding more becomes a matter of choice rather than necessity.

Web Resources

There's a wealth of information, free utilities, and other niceties on the Net. Here's a list of the best ones.

3Dfx resources

www.voodooextreme.com

www.planetquake.com/gldojo/

www.o3dfx.allgames.com/

www.3dfxmania.com/

RIVA 128

www.midtnweb.com/rivaextreme/

www.rivazone.com

pages.prodigy.net/babblin5/Main.html

Rendition

members.octonline.com/mattpetk/rendition_resource/

www.bjorn3d.com

All Things Evil

www.geocities.com/SiliconValley/Horizon/8276/

S3 ViRGE

www.tbrowne.demon.co.uk/s3virge/

Miscellaneous

www.real3d.com/primer/contents.html

www.fastgraphics.com/

New Cards on the Horizon

New technologies are on the horizon that will push 3D performance even further. Here's the skinny on three new accelerator chipsets that you might want to consider if you're willing to wait a little while to make the jump.

Revved up RIVA

Sometime this summer, we'll be seeing cards that use the RIVA 128 Turbo. The Turbo is an enhanced version of the original RIVA 128 used in the Diamond Viper, STB Velocity 128, and a host of other cards. As with the original card, the Turbo supports both Direct3D and OpenGL games.

What's been enhanced? Speed, for one. The internals of the chip have been streamlined so that the 3D engine doesn't spend as much time sitting around waiting for things to happen. One key, much-requested enhancement is the increase in maximum local memory to 8MB. A RIVA Turbo card with 8MB of 100MHz SGRAM would make a very nice AGP primary card in a new Pentium II system.

The Sleeping Giant Wakes

Nearly two years ago, Intel cut a deal with Lockheed Martin's Real3D division to bring its hardware acceleration technology to a consumer price point. The result is the Intel 740. The actual 3D performance will probably be about the same as the RIVA 128, but the image quality should be better, due to the use of per-pixel MIPmapping. The 2D performance and VGA performance is still an open question, however. The 740 is an AGP-only part, but can support up to 8MB of local SGRAM. The 740 supports Direct3D and OpenGL; there is no proprietary API. It makes full use of advanced AGP features, including AGP textures and full support for AGP speed enhancements (2x sideband and address demultiplexing for you techheads). This also might be an interesting card as a primary card in an AGP system, but wait until you see the reviews before buying.

Voodoo Redux

The best news about the upcoming 3Dfx Voodoo2 chipset is that all the current 3Dfx Voodoo Graphics titles are supposed to run on Voodoo2; 3Dfx learned its lesson after the confusion that resulted with the release of Voodoo Rush. Voodoo2 adds a full triangle setup engine, resolutions up to 1024x768, and the ability to link two cards together in SLI (scan line interleave) mode. 3Dfx is claiming that a single Voodoo2 card will double the performance of the original Voodoo Graphics.

Other than the above, no new features have been added. But it's compatible, it's fast, and it should be on the "A" list of anyone with a free PCI slot. Although the chipset is capable of working in an AGP slot, it makes no use of AGP textures or other advanced AGP features. Since 3Dfx is suggesting that the PCI bus is not the bottleneck, then get a PCI version alongside a fast 2D/3D AGP part if you have an AGP system.

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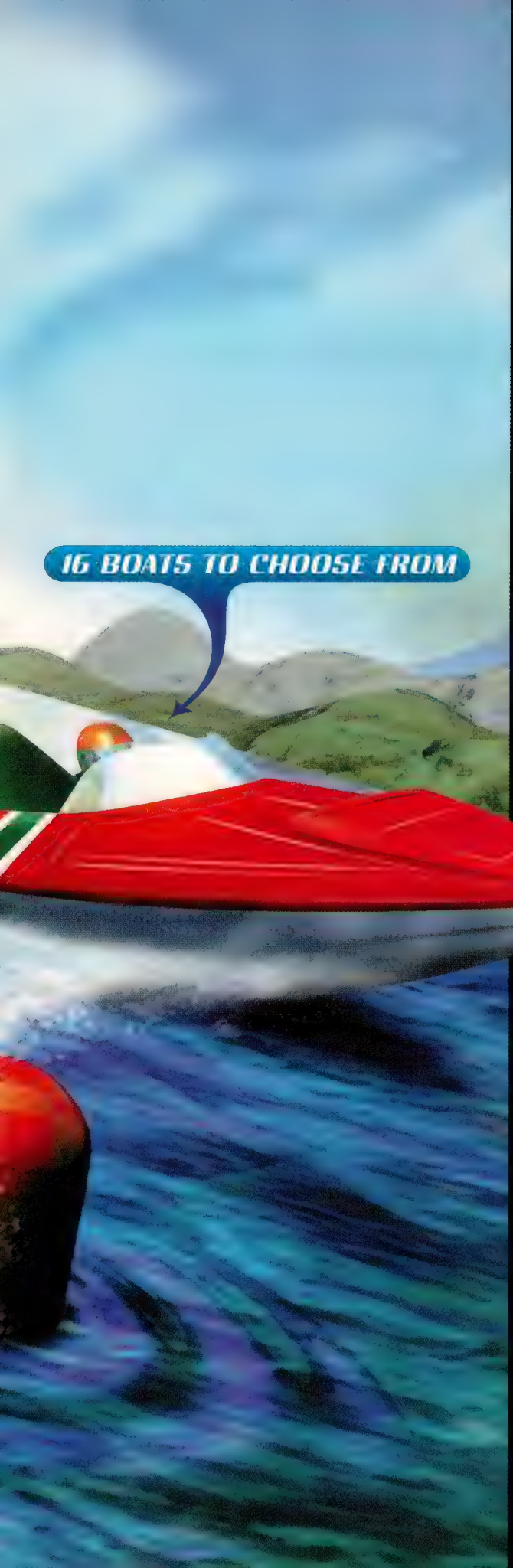

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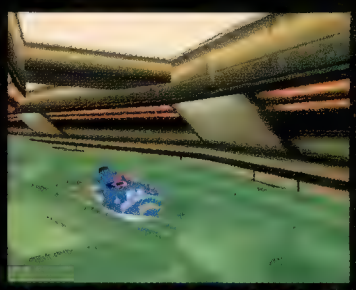
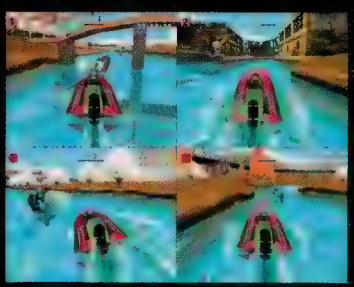


Check out the tunnels but don't get too friendly with the walls.

See the sights in New York, but watch out for the cabs!



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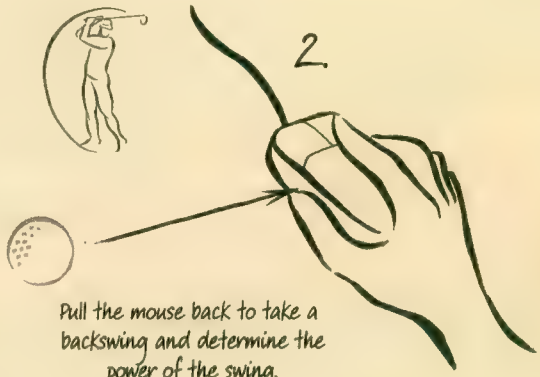
1.

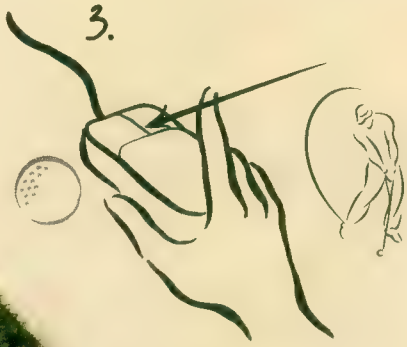
Angle the front face of the mouse to open or close the club and set the curvature of the shot.

2.

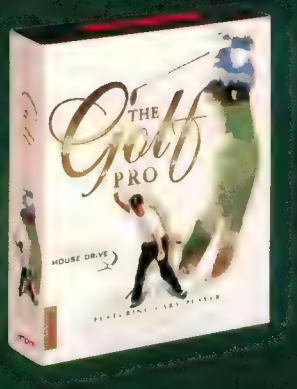


Pull the mouse back to take a backswing and determine the power of the swing.

3.



Move the mouse forward and hit through the ball, timing the release of the mouse button before contact to set the loft and backspin of the shot.



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Bye-Bye, ISA

ISA Sunset and Audio News: As the PC 98 specification solidifies, one thing is certain: Within a year, we'll be seeing computers with—count 'em!—zero ISA slots. One piece of hardware that's still mired in the ISA bus is the sound card. There have been a few PCI sound cards shipping, but the Big Daddy of sound cards, **Creative Labs**, has been holding off—until now. It looks like we'll finally have a PCI **Sound Blaster** to grace our PCs. The question is this: Will it run DOS games in DOS mode?

In an interesting move, Creative Labs has recently acquired keyboard and sound-card maker **Ensoniq**, whose AudioPCI sound card has appeared in a number of systems from **Gateway** and other PC makers. Word has it that Creative purchased Ensoniq in part to win back market share that it had lost to Ensoniq selling to system makers.

AGP News: As more AGP graphics chips hit the market, including Intel's AGP-only 740 chip, Pentium and AMD K6 users are feeling a bit left out. However, motherboard manufacturers **Gigabyte** and **FIC** feel your pain. FIC recently started shipping the FIC 2012, a Socket 7 AGP board using the VIA Apollo VP3 chipset. Gigabyte is using the new SIS 5591 chipset. Due to the AGP architecture, performance is an open question, but, as always, options are a good thing. We'll be checking out these boards in the near future and bringing you the results.

Meanwhile, **AMD** is hard at work on its "Super 7," an enhanced version of the Socket 7 spec for Pentium-class processors. AMD knows that Socket 7 (the current socket used to hold Pentium and AMD K6 CPUs inside your system) has some limitations. The socket issue was brought to the forefront by **Intel**'s new Slot 1 for the Pentium II. Intel has patented Slot 1, leaving other CPU makers scrambling for alternate solutions as Socket 7 begins to show its age. Super 7 is interesting in two ways: It will be yet another Socket 7 solution that will have AGP functionality; and it will give the CPU's Level 2 (L2) cache its own dedicated backbus, meaning that the L2 cache won't have to share bandwidth with the main memory bus.

▸▸▸Continued on pg 99

Voodoo2 Coming Soon

Voodoo2 cards are on the radar screen at last. A number of hardware makers, including **Creative Labs** and **Jazz**, have announced cards based on Voodoo2. Voodoo2 is really just an evolution of the original Voodoo card, with a focus on increased performance rather than new features. **3Dfx** has added a full triangle setup engine to the base architecture, as well as the ability to support multiple cards in a system (called Scan Line Interleaving mode, or SLI). You can add a pair of Voodoo2 cards to your system, connect them with an internal cable and nearly double your frame rate under supported games. In certain configurations, Voodoo2 will also be able to handle multitexturing in a single pass on games that support it. QUAKE II already supports multitexturing and DirectX 6.0 will support it as well. Microsoft has added some tweaks to Direct3D in DirectX 6.0 to support SLI mode.

Speaking of DirectX 6.0, it's about to enter beta. At present, there's no support for hardware geometry acceleration, but there is support for bump mapping. And it's also rumored that further down the line there will be a DirectX 6.5 that will add support for hardware geometry acceleration—particularly lighting transforms.

The 3D hotshots at **nVidia**, flush from their success with the RIVA 128, are not standing still. They've recently announced the RIVA 128 ZX, which doubles the maximum local memory to 8MB, thereby addressing one of the key deficiencies with the RIVA 128. In addition, they've streamlined the architecture and expect a better than 50 percent increase in overall throughput. Look for RIVA 128 Turbo cards to hit the streets by midsummer.

Now that the dust has settled on AGP, **Intel** is hard at work on the AGP 2.0 spec. One thing it will add is AGP 4x mode, which will up the maximum throughput to 1GB per second. Couple this with very fast memory (RAMBUS or high-speed SDRAM) and the need for local texture memory in a 3D accelerator begins to diminish. However, we probably won't see AGP 2.0 motherboards until early '99. — *Loyd Case*

HARDWARE PIPELINE

Product	E.T.A.
RIVA 128 ZX	Q2 '98
Intel i740	Q1 '98
3Dfx Voodoo2	Q1 '98
Cyrix Cayenne CPU	2H '98
Deschutes (400MHz Pentium II)	Q1 '98
440BX chipset (supports 100MHz system clock, 4 CPUs)	Q1 '98

▸▸▸Continued from pg 98

Non-Intel X86 CPU Makers Unite (sort of): Three companies are currently offering X86 CPU alternatives to Intel's Pentium and Pentium II lines: **Cyrix**, AMD, and **IDT/Centaur**. Unfortunately, all three have a problem: floating-point performance.

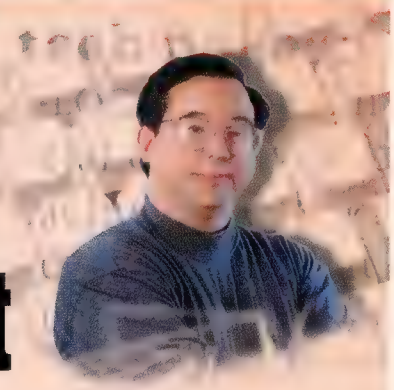
The integer performance in the alternatives from all three companies' makes them competitive with Intel, but they all lag at least somewhat on floating-point performance. To remedy that performance problem, AMD developed its own small, extended set of floating-point instructions to speed up DirectX 6.0's software geometry accelerator. Initially, it looked as though Cyrix and Centaur would go their own ways in developing other instruction extensions, but they have instead decided to use AMD's. This is good news, in that it shouldn't muddy already murky waters as to whose game will run on whose 3D chip. The bad news is that it's still unclear as to whether these three CPU makers can agree on a common socket specification. Already, because none can use Intel's Slot 1, the motherboard market will become somewhat fragmented in 1998, and if the three cannot agree on a common non-Slot 1 socket, the fragmentation will be further compounded. —*Loyd Case and Dave Salvator*

ACRONYM O' THE MONTH

XDSL: Refers to the different Digital Subscriber Link technologies currently under development. Intel has recently announced an initiative, dubbed Quick Web, with Compaq, Microsoft, and all but one of the regional phone companies to develop a single XDSL standard that will allow for downstream speeds of upwards of 1.5M bits per second—about 30 times faster than current 56K modems. XDSL is a promising technology because it should be able to achieve these speeds over existing phone lines.

LOYD CASE • UNDER THE HOOD

A Tale of Tech Support



Or, How I Learned to Kill Windows 95 in Order to Save It

It's early January as I write this, and with the coming of a new year, my thoughts turn to New Year's Resolutions, housecleaning, taking down the holiday decorations and reinstalling Windows 95.

No, that last one isn't an afterthought. In fact, I've been thinking about it a lot lately. I get tons of email, as you might imagine, but I recently got a series of messages from one user that captures the essence of frustration. This particular user, who wishes to be unnamed, was trying something we all go through at times: to get a couple of DirectX games to run. One was PACIFIC GENERAL, a DirectX 3.0 game; the other was PANZER GENERAL II, a DirectX 5.0 game. Neither game demands a high level of system resources (we're not talking QUAKE II here). Both games are relatively bug free.

Our frustrated user didn't have a particularly unusual system, either: a Pentium 133, ATI 3D Xpression graphics card, 32MB of RAM. About the only oddball component was an NEC CD changer. CD changers can be a headache sometimes because you always have to be sure that the CD is in the same slot (since most changers assign a fixed drive letter to each changer slot). Even so, the errors that this gamer was getting didn't point to the CD as a source of his problems.

So naturally, he turned to tech support—first SSI tech support, then ATI tech support. Both support groups gave him some suggestions, some of which looked useful. The ATI response, in particular, was quite detailed.

Unfortunately, the advice he got assumed a high level of technical expertise. This user *was* technically savvy, but I shudder to think what someone like my brother-in-law would do if someone told him to "toggle video ROM shadowing and/or video ROM caching to disabled in CMOS setup, and make sure palette snooping is disabled."

This particular user

▸▸▸Continued on pg 102

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▸▸▸Continued from pg 99

wasn't happy with his tech support experience, but from what I could see, the support folks did everything they could. Troubleshooting obscure and tricky problems is tough over the phone, and even more difficult via email, when you can't ask questions in realtime. At times, however, games just refuse to run.

Sometimes it's the game's fault. I develop a twitch in my left eyebrow every time I think about trying to get HEAVY GEAR to run over a network. Too many games are simply shipped before their time.

But sometimes, you just have to nuke Windows.

JUST KILL IT

All right, a number of you are either stunned at this or cackling with glee. However, I don't mean *permanently* nuking Windows; there are too many good Windows-only games. I mean removing it and reinstalling it. Windows 95 deteriorates over time, as you set up and delete games and applications, download stuff over the Net, and install updates. At some point, the system gets sluggish and games that once ran splendidly suddenly blow up without notice. Denny Atkin, our features editor, has experienced this on a number of occasions, and believes that reinstalling Windows every 6–12 months is a good idea. I concur, and here's how to do it.

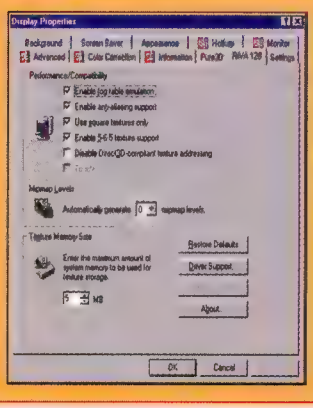
Step 1 *Back up your system.* I mean, back up *everything*. It may take a zillion floppies if you don't have a tape drive or removable hard-drive, but it will let you go back to a known state if you get into trouble. (Backing up to a second hard drive is acceptable.) Do a file-by-file backup; don't use one of those "partition image" tools. Next, make sure you have all of the installation CDs and floppies for *all* your applications. Have the driver disks for all your hardware available, too. If you're feeling ambitious, you can set up a directory on a hard drive or Zip drive to contain all the drivers in their own separate folders. If you have the upgrade version of Windows 95, make sure you have the original setup disk 1 from your Windows 3.1 disk set, as Windows 95 will ask you for it during the install. Also, make sure you have all the necessary serial numbers handy.

Step 2 Now that your stuff is all backed up, run SCANDISK with the "Full" option, so it performs a full surface scan of your drive. This way, if bad spots have developed on the drive, they will be marked as bad and won't be used later. Next, defrag your hard drive (we'll do this once more, after the reinstallation). If you're feeling particularly ambitious, you can even reformat your hard drive, but this is necessary only in dire circumstances.

Step 3 The next thing to do is set up your system so that reloading Windows is easy. First, copy the contents of the \windows\command directory into a different directory (since I don't have MS-DOS anymore, I copy all the files into \dos). Then copy HIMEM.SYS from the \windows folder to the root folder. Next, if you don't already have it, create a

CTECH TIPS

▸ If you're a user of cards using the RIVA 128 chipset, do yourself a big favor and head over to the RIVA extreme Web site (**www.midtnweb.com/rivaextreme/**) and pick up a copy of the RIVA 128 Tweak utility. It installs as a tab in your display control panel. It's particularly handy for games that don't handle the RIVA's auto-MIPmap feature well. Just set the auto-MIPmap levels to zero.



▸ If you like to give yourself a moment to choose whether to boot into Windows or boot to the DOS prompt, just add the following commands to your MSDOS.SYS file:

BootMenu = 1
BootMenuDelay = 15

The Windows 95 boot menu will appear when you start your system and give you 15 seconds to make the choice. Note that MSDOS.SYS is normally a read-only file; you may have to change it to read/write by altering its Properties sheet with the Windows Explorer.

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-Next Generation

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CONFIG.SYS file that has the DOS real-mode driver for your CD-ROM drive. Then make sure that MSCDEX.EXE is loaded in your AUTOEXEC.BAT file. There are some other things you'll want loaded as well. Here's an example of what the file should look like:

CONFIG.SYS:

```
DOS=high
DOS=umb
Device=c:\himem.sys
Device=c:\cd\atapi_cd.sys
/d:mscd001
```

AUTOEXEC.BAT:

```
C:\dos\mscdex.exe /d:mscd001
```

Step 4 Now reboot. When you see the "starting Windows 95" message, press the F8 key. Select "boot to the command prompt" menu item. You'll now be at the DOS prompt. Now, change to the \dos directory by typing "cd \dos".

Step 5 Take a deep breath. Did you back up everything?

Now, to ensure that your CD-ROM drive is working properly under DOS, put your Windows 95 CD in and type "DIR D:" (assuming D: is your CD-ROM drive). If you get a directory of the CD, you're ready to zap Windows.

Type "deltree c:\windows". (If your Windows directory is something else, substitute that directory name.) Your hard drive will churn for a while and then Windows will be gone. Savor that feeling for a moment. Now change to your CD's drive letter, and type "setup".

Follow all the usual instructions. At some point, Windows will reboot the system. When it does, press F8 at the "starting Windows" message and once again boot to the DOS prompt. Change the disk to \dos and type: "edit c:\autoexec.bat". You may find that Windows setup has commented out the mscdex line; if so, uncomment it, or you may not be able to find the CD drive when Windows asks you; this is silly and annoying, but necessary.

Step 6 Finally, after a couple more reboots, you'll be back in a clean version of Windows. The hard work of installing drivers will begin. Note that users of newer motherboards may also have to restore their motherboard INF files (this is also known as the "PIIX4 patch" and can usually be found on a diskette that came with your motherboard or computer). Restoring the motherboard INF files will remove extraneous undefined devices in the Device Manager. After you've reinstalled all of your applications, rerun Windows 95's Disk Defragmenter.

You'll probably notice that games that didn't run well suddenly run better and that many mysterious system crashes no longer occur.

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Presario: Close But No Cigar

New Compaq Delivers a Mixed Bag of Performance With Limits

by Loyd Case

At first, the Compaq Presario 4850 looks like a gamer's dream machine. At a shade under $2,500, you get a 300MHz Pentium II, 48MB of SDRAM, a 6.4GB hard drive, AGP graphics, a 56K modem, digital audio, and a DVD drive. But looking closer, it turns out that this new Presario is a mixed bag of high performance and odd frustrations that limit its usefulness as a gaming platform.

The 4850 is a snap to set up. Take it out of the box and plug in the monitor, keyboard, and mouse. Attach the power cord; the system will power up on its own. The Windows 95 install files are on the hard drive, making life a little easier. Cable connections are color-coded, so the keyboard and mouse attachments are straightforward. There's a large power button on the center of the box and a row of buttons just below that for managing the DVD drive and telephony functions. The DVD drive and video-input connectors lie beneath a door that flips open.

All's Not Well

It's when you look at the back of the computer that the first misgivings strike. There's a joystick/MIDI port in an odd position, indicating that the sound chip is embedded on the motherboard. Then you notice that the VGA connector is also in a weird place: The AGP graphics chip is also embedded on the motherboard. Although the ATI Rage Pro accelerator is a decent AGP chip, the fact that it's soldered onto the motherboard means you'll never be able to upgrade the graphics.

The second-generation DVD drive works pretty well. CD data loads reasonably fast. The hard drive is the weak link; it's a Quantum Bigfoot, which rotates only at 3,600RPM.

The rig posted a CPUMark 32 of 768 and FPUMark of 1,550—about what you'd expect for a 300MHz Pentium II. The 2D graphics were decent, too, and posted a score of 141 (1024x768x16) on WinBench 98's graphics WinMark. The CD-ROM WinMark was slow at 968, but faster than past DVD drives we tested. The low CPU utilization (under 4 percent) was a plus. As I suspected, the hard

drive was the slowpoke—the 863 score is poor compared to most 5,400RPM IDE drives. The 3D WinBench 98 score was disappointing, too—the Rage Pro AGP chip turned out a paltry 374.

Part of the reason for the relatively low 3D in 3D WinBench can be attributed to the older driver used by Compaq. Upon loading the most recent drivers, the 3D WinBench 98 score jumped to about 466—much faster, though still slower than the equivalent RIVA 128 scores.

Adding expansion cards was an annoying endeavor, due to the rig's use of hex screws. Compaq uses an NLX motherboard; the expansion slots are actually part of a riser card (in a self-contained metal cage) that snaps out of the motherboard. The riser itself was very easy to remove, and securing PCI or ISA cards is a snap. I added a 3Dfx card and a PCI Ethernet card; both worked without a hitch.

The Hits Just Keep on Comin'

Audio proved to be another disappointment. The ESS audio chip only supported FM MIDI—a poor choice for gaming. While you can always add something like a Yamaha SW60XG wavetable card, it's too bad Compaq left out wavetable sounds. On top of that, the unit put out a lot of hiss when the speaker volume was cranked up.

The software bundle is decent, but nothing to write home about—the usual mix of home productivity apps (Microsoft Money and Works) and a couple of games (Psygnosis FORMULA 1 and CYBERTROOPERS from SegaSoft). There's no bundled game controller. One nice touch: all the DOS real mode drivers for CD, mouse, and audio were properly set up for a restart to DOS mode.

The Presario 4850 is something of a mixed bag for gamers. It's easy to set up, and it is relatively easy to add expansion cards. However, the primary graphics chip can't be upgraded, the audio is mediocre, and the hard drive is slow. Still, it does offer decent performance at a good price. If you're looking for a fast second computer or a system for your kids, the 4850 may be the ticket. Just make sure you download the latest ATI video drivers.

Price: $2,495 (monitor not included)
Manufacturer: Compaq Computer Corp.
(800) 888-0220
www.compaq.com

APPEAL: Users looking for a high-performance system that's simple to set up and use.

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CONS: Older ATI drivers are buggy; slow hard drive; non-expandable graphics; poor audio.

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Aristo tries to succeed with a simple plan: a Global Party

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[illegible]s that sic fun has been lost as of late in the arcade industry. According to Dave Albert, vice president of Aristo:

"Aristo is about bringing people together. Too many [illegible]n into

several products coming. Besides upcoming football and hockey games, there is a tabletop version of "Pong," with up to eight players (called TeamNet, picture below). They also plan to launch Playnet for music and TouchNet which through ISDN lines will [illegible]ing the net to bar loca[illegible]d for more!

RETROMAGS

Pages 110 to 117 are not missing; this is due to a numbering error in the original CGW publication.

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learned ho[illegible] high-speed polygo[illegible] least bought the equipment from a company that knew how). At the AMOA, there were a plethora of driving sims, most of which were mentioned earlier: Cruis'n The World, San Francisco Rush and more. Sega's newest installment was called Sega's Touring Car. A strange game in a few ways: First, it feels quite a bit like Sega

Aga[illegible] feel of the car is not 100 percent, but these companies are nowhere near as established as Sega and Namco in the driving field. Perhaps this is a trend starting; the big guys lead the way and others will follow (ahem, Street Fighter).

Cobra
Performance:
1 to 5 million polygon/sec
50 to 250 million pixels/sec
Resolution:
640 x 400 to 1,280 x 1,024 pixels
144 Bits/pixel frame buffer
256 level alpha blending
Shading:
Subpixel sampling antialiasing
Flat shading
Gouraud shading
Lighting:
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Boar[illegible] support 1 million polygon[illegible], where the Cobra is just being learned to program on and it reaches more than 1 million—first try!

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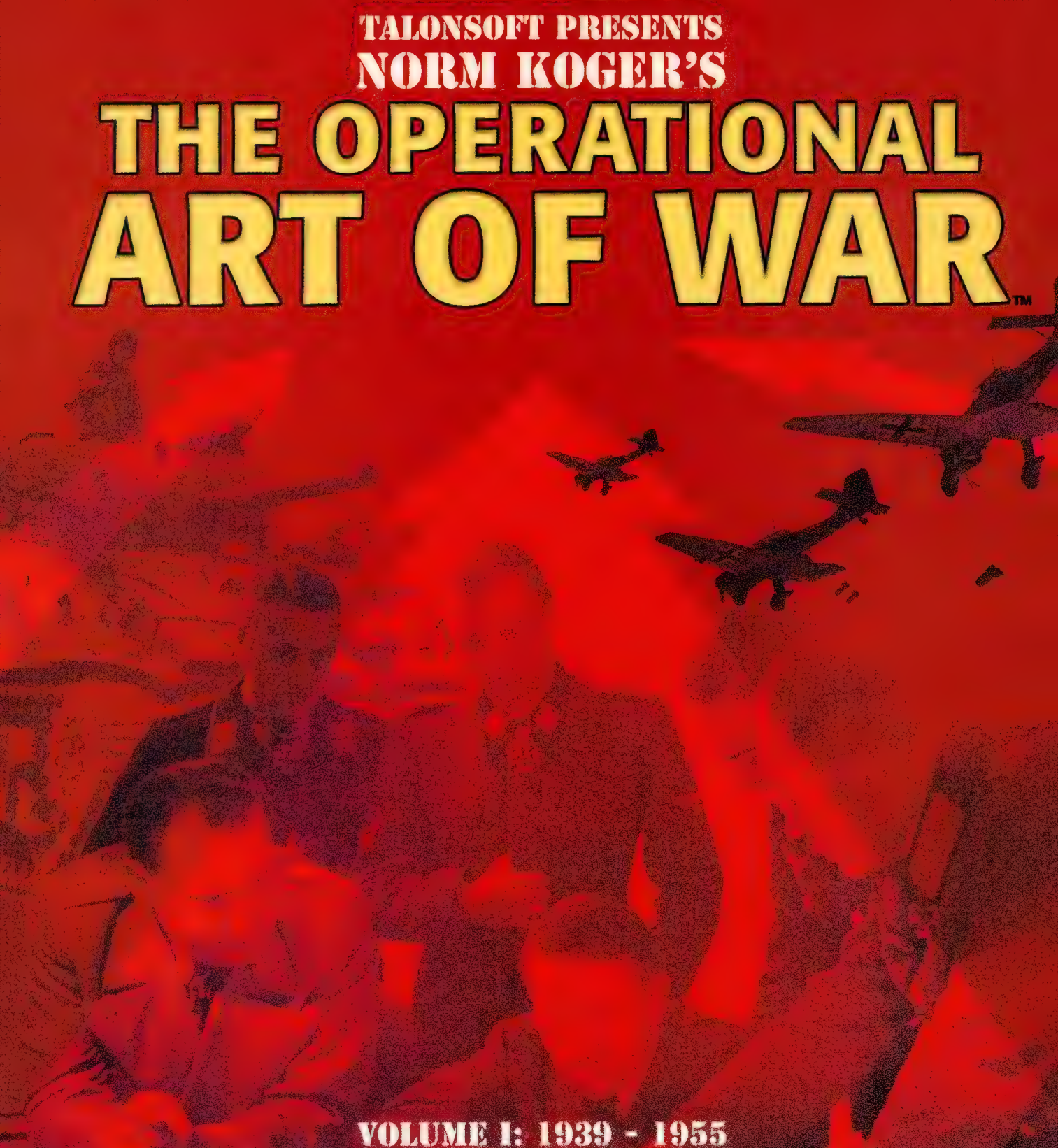

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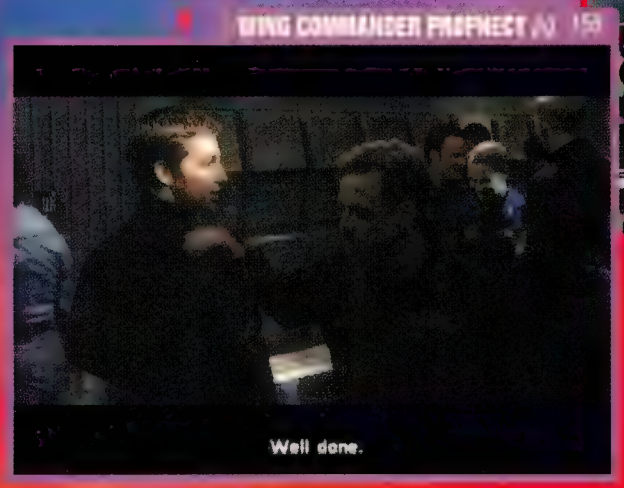
CG Choice Games This Month



Review Quote of the Month

"How best to describe THE TONE REBELLION? Imagine a world designed by the Catalan architect Gaudi, with input from H.P. Lovecraft and H.G. Wells after a bad bit of curry."

Martin Croft, reviewing THE TONE REBELLION

HOW DO WE RATE?

We review only finished products, not prerelease versions. The ratings are as follows:

Outstanding: The rare game that gets it all right. The graphics, sound, and gameplay come together to form a Transcendent Gaming Experience. Our strongest buying recommendation.

Very Good: A high-quality game that succeeds in many areas. It may have minor problems, but is still worth your money, especially if you're interested in the subject matter or genre.

Average: A mixed bag. It can be a game that reaches for the stars, but falls short in several ways. It can also be a game that does what it does well, but lacks flair or originality.

Weak: A game with serious problems. Usually buggy, seriously lacking in play value, or just a poorly conceived game design—you should think long and hard before buying it.

Abysmal: The rare game that gets it all wrong. This is reserved for those products so buggy, ill-conceived, or valueless that you wonder why they were ever released in the first place.

run, stop, hear soldiers flanking y
scanner, duck under gun turret's
lines, turn on flashlight, sneak p
window, surprise squad of sold
HALF

MATURE
M
AGES 17+
CONTENT RATED BY
ESRB

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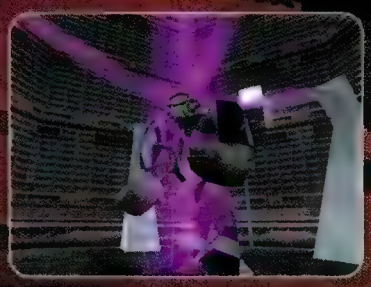
ou, retreat, lead scientist to retinal

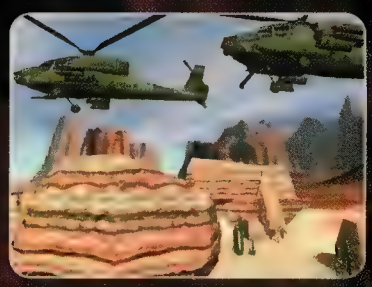
fire, loot enemy corpse, cut power

ast four-story alien, break through

iers, aim, shoot, kill...

- L I F E





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shoot, shoot, run, run

bored yet?

CGW Review Index

These Are the Games We Have Reviewed in the Last Two Months

Game Name	Issue	Page	Publisher	Rating
ACTION				
3D Ultra Pinball: Lost Continent	March	140	Sierra On-Line	★★★★
Abe's Oddysee	February	146	GT Interactive	★★★½
Chasm: The Rift	February	153	GT Interactive	★★★
Defiance	February	160	Visceral Productions/Avalon Hill	★★½
Excalibur 2555 A.D.	March	142	Sir-Tech	★
G-Police	March	127	Psygnosis	★★★★½
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ManxTT	March	134	Sega Entertainment	★★★
Mass Destruction	March	151	ASC Games	★★
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Postal	February	150	Ripcord Games	★★½
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Galapagos: Mendel's Escape	February	228	Electronic Arts	★★★★
Hoyle Classic Card Games	March	227	Sierra On-Line	★½
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F-22 ADF	March	172	Ocean	★★★★½
F-22 Raptor	March	180	NovaLogic	★★★★
Forced Alliance	February	209	Ripcord Games	★★★½
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Sabre Ace	February	200	Virgin Interactive	★★½
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Close Combat 2: A Bridge Too Far	February	218	Microsoft	★★★★½
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Seven Kingdoms	March	193	Interactive Magic	★★★★

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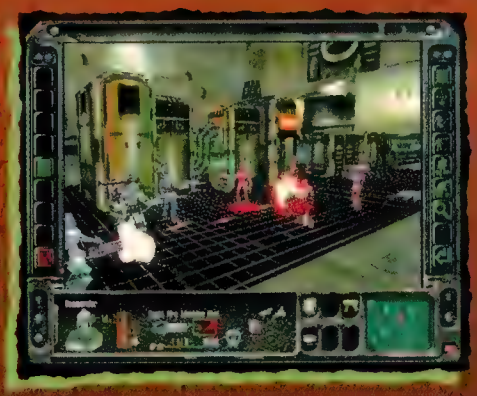

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DIFFICULTY LEVEL: INTERMEDIATE

by Mark Clarkson

Since it's impossible to talk about CROC without comparisons to Nintendo's SUPER MARIO 64, I'll get that over with up front. CROC is very, very similar to that popular N64 game. As the adorable headliner in this third-person, 3D platform game, you'll run, jump, and smack baddies upside the head with your tail, all the while leaping from platform to platform, collecting crystals, and saving the fuzzy little Gobbos.

A MULTIPLATFORM GAME

Croc can run, jump, stomp (to open crates and plugged wells), climb walls, bounce on mounds of pink Jell-O, slide on ice, swim underwater, dangle from balloons, and drive boats. There are keys and secret levels to find, locked doors to open, and even some engaging mini-games to play, such as three-card Monty or whack-a-sheep.

But you'll spend most of your time leaping between platforms. There are platforms that move back and forth, up and down, or around in circles; platforms that shatter or plunge downward after a few seconds; and platforms that move in conveyor belt–like streams. In the end, though, they're just platforms.

Likewise, the enemies exhibit a certain "sameness." There are penguins and snakes and bees and doggies, but the majority of the bad guys look like little plush devil toys from an iron claw machine. Some hop, some fly, some throw snowballs, and some shoot tridents at you, but they're all cut basically from the same cloth.

GOOD CLEAN VIOLENCE

Good news, Mom: There's no blood in CROC. Smack a bad guy and he disappears in a shower of sparks. Don't fear; he's not really dead. In a few seconds, he'll pop right back again.

Take a hit yourself and any crystals you've collected fall on the floor; you get about five seconds to collect them again before they fade away. If you're out of crystals, you lose a life and start over at the nearest set point. If you're out of lives, you must restart the entire level.

CROCODILE BUNGIE Croc will leap, tail slap, and bounce his way around in this MARIO 64-like game of platform jumping and gem collecting.

In true console-game fashion, CROC allows you to save your game only between levels, each of which consists of several segments. Some of the segments, especially later in the game, become frustrating, then infuriating, then tedious as you repeat them dozens of times. To make matters more maddening, the camera position is sometimes awkward and can put you in fatal positions.

ISN'T THAT CUTE!

Still, this is a fun game. It sounds good and it looks good. The animation is great. Platforms bob as you land on them, and characters leave footprints in the snow and sand.

What's more, CROC actually runs acceptably on the minimum required machine (a P-133), even without acceleration. On my Voodoo Rush–equipped P2-266, it ran at true arcade quality.

But be forewarned: This is a cute game. Croc is cute. The Gobbos are *way* cute. Even the evil devils barring your way at every turn are pretty darned cute. But once you get past the cuteness and lack of save games, CROC is a delightful example of the emerging genre of 3D platform games. And this is one 3D romp that is well worth your time and money.

APPEAL: Fans of platform games looking to move into the third dimension, and anyone suffering from MARIO 64 envy.

PROS: A fun, simple, and well-executed platform game; closest thing to MARIO 64 on the PC.

CONS: Too few save game opportunities; occasional bad camera angles; may be too cute for some.

CG RATED ★★★★

Price: $39.98
System Requirements: Pentium 133 or better, Windows 95, 16MB RAM, 100MB free hard-drive space, 2x CD-ROM, DirectX-compatible sound and video hardware.
3D Support: 3Dfx, ATI Rage, Matrox Mystique, S3Virge.
Multiplayer Support: None.
Designer: Argonaut Software
Publisher: Fox Interactive
Los Angeles, CA
970-522-5639
www.foxinteractive.com

Where the hell...

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THE CRITICS AGREE!

"MicroProse's game offers weeks to months of gameplay."
Computer Gaming World, June '97
★★★★

"Magic: The Gathering is just what the Samite Healer ordered."
Computer Games Strategy Plus, June '97
★★★★

"Magic: The Gathering is a near-perfect translation of the card game."
PC Magazine, June '97
★★★★

"...hard-core gamers will appreciate the flexibility offered in the computer version."
Newsweek, April '97

...did you get those cards?

of their respective holders.

Storm Seeker deals 1 damage to target player for each card in his or her hand.
: Gain 1 life.
The Fountain had stood in the town square for centuries, but only the pigeons knew its secret.
First strike, flying.
"It was full of fire and smoke and light and... it drove between us and the Hrafans like a thousand thunderstorms with lightning."
–Richard Adams, Watership Down
: Banshee deals X damage, half (rounded up) to you and half (rounded down) to target creature or player.
Some say Banshees are the hounds of Death, baying to herd their prey into the arms of their master

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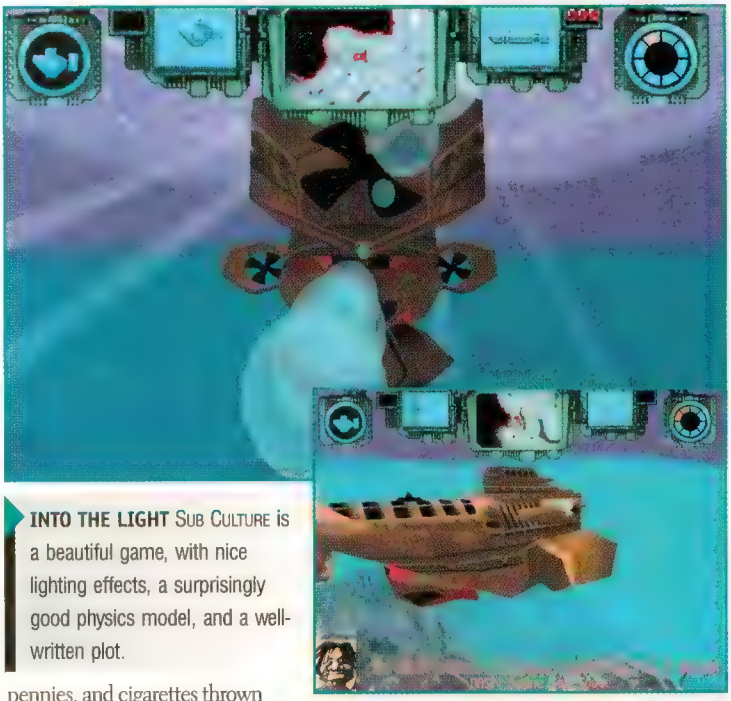
DIFFICULTY LEVEL: EASY

Calypso Reborn

Submarine Action-Adventure Shows the Beauty of the Deep

by Thierry Nguyen

Action games have often taken us to far-off galaxies and crime-infested cities, but very few have taken us for a dip in the ocean. The last good underwater action game was last year's ARCHIMEDEAN DYNASTY. Finally, someone has gone down to the sea again. Sailing into an ocean of derivative action games comes Ubi Soft's SUB CULTURE, an underwater action game that could be the best underwater game ever.



INTO THE LIGHT SUB CULTURE is a beautiful game, with nice lighting effects, a surprisingly good physics model, and a well-written plot.

TROUBLED WATERS While your mission choices are supposed to affect your relationships with the warring sides, being friend or foe doesn't make much of a difference.

LILLIPUTIAN LIFESTYLE

SUB CULTURE puts you in an environment that's a mix of Cousteau and Swift: a lush underwater world filled with centimeter-tall humanoids. The introduction shows your home being crushed by a tin can; leaving you homeless, penniless, and stranded in your submarine.

The game has a good back story that concerns the war between the Procha and the Bohine. Your involvement in this war is the focus of the game and its well-done and satirical plot.

UNDER THE SEA

The game engine does an excellent job of modeling both the physics and the abundant life of the sea. (The visual effects look even better with a 3Dfx card.) The game has a good lighting model, showing off the sunlight and the cycle of day and night. And inertia is modeled so well that you get the feel of added mass when you tow something.

The world is filled with a large variety of sea creatures, ranging from fish to turtles. The environments are so visually rich in sea life that simply cruising the ocean is a satisfying experience.

Gameplay revolves around two actions: commerce and missions. Commerce involves gathering resources such as metals and tobacco and trading them for money in the appropriate cities. (The resources are, in reality, the dimes, pennies, and cigarettes thrown into the ocean by humans.)

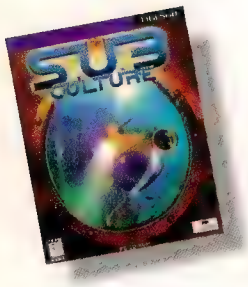
The missions are excellent and are the heart of the plot. Instead of repetitive sub hunts, we get a mix of mission types. You'll conduct hostage rescues, spy runs, and fishing expeditions. To fulfill these missions, you'll outfit your sub with a variety of gadgets, ranging from flares to homing missiles to a miniature recon craft.

SINKING SHIP

There are a few problems with SUB CULTURE. The biggest is that it's easy. Veteran action gamers will finish the game in a few days. Also, although there are different missions for each side, a few are exactly the same no matter whose colors you fly. This is a little disappointing considering that each side is supposed to be different.

Other annoyances include the save system (there are only seven save slots, which you can't rename), the high cost of items (which makes trading more difficult than it should be), and the single sub type. The game also has no multiplayer support, but it's a good enough single-player game not to need it.

In the end, SUB CULTURE is an amazingly immersive game hampered by minor problems. With luck, Ubi Soft will address the few problems in a SUB CULTURE 2 and deliver a truly great ocean experience.



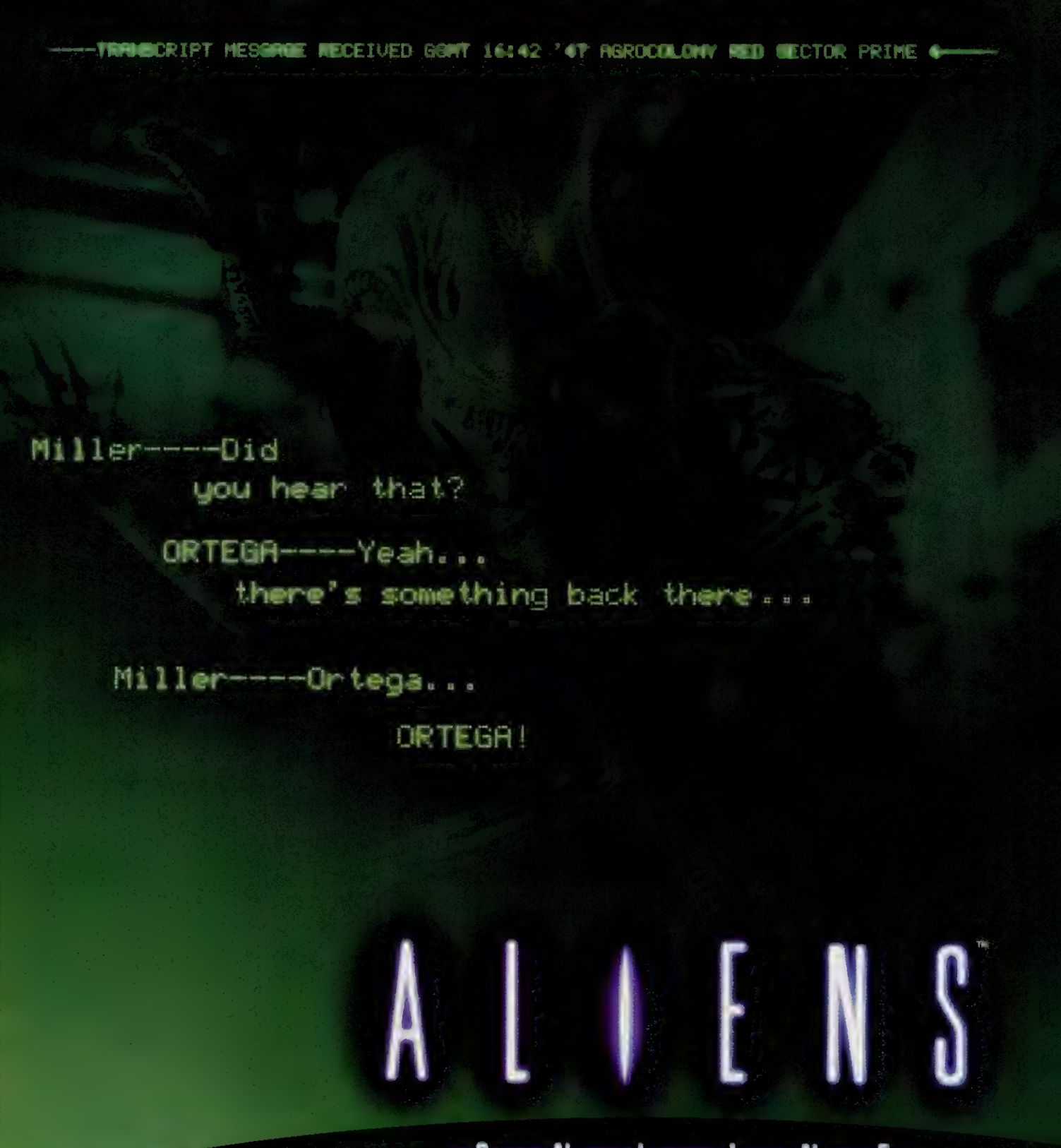
Price: $49.95
System Requirements: Pentium 90, Windows 95, 16MB RAM, 80MB hard-drive space, 4x CD-ROM, Windows 95–compatible sound and video cards.
3D Support: Direct3D, 3Dfx, PowerVR, Rendition.
Multiplayer Support: None.
Designer: Criterion Studios
Publisher: Ubi Soft Entertainment
San Francisco, CA
(415) 547-4000
www.ubisoft.com

APPEAL: Gamers looking for a beautiful underwater experience or a free-form trading game.

PROS: Beautiful and immersive game engine; good mission design; nice variety of gadgets for the sub; well-done, satiric plot.

CONS: Slightly annoying save system; some duplicated missions; a little too short.

CG RATED ★★★★


----TRANSCRIPT MESSAGE RECEIVED GSMT 16:42 '4T AGROCOLONY RED SECTOR PRIME
Miller----Did you hear that?
ORTEGA----Yeah... there's something back there...
Miller----Ortega...
ORTEGA!

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Sir.Trent: what spells do you have left?

Morgana: NONE -- i used my last on the stairs

Sir.Trent: then all we have is a sword . . .
i'll go alone

Morgana: no! Sir.Trent!!

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KESMAI STUDIOS

Connect & Conquer

Westwood's Online Action Game Is a Blast...When the Lag Doesn't Get You

by Robert Coffey

DIFFICULTY LEVEL: EASY

With COMMAND & CONQUER: SOLE SURVIVOR, Westwood Studios has released an addictive little action title that captures some of the C&C flavor while delivering its own unique charms.

SHUT UP AND SHOOT

After registering the game, you'll be taken to Westwood Online, where you can quickly and easily start a new game or join one in progress. Double-clicking on a channel shows who is playing, the maximum number of players, and, most importantly, how good your connection is. The last step is to select your unit from about two dozen possibilities, including infantry, armored vehicles, and even some dinosaurs.

Domination comes through power-ups acquired from the crates littering the sprawling game maps. These crates, which enhance armor, speed, weapon strength, range, and rate of fire, can turn a Minigunner into a Mammoth Tank-killer. To keep faster units from scooping up all the crates and squishing everyone else, the designers have wisely added the ion cannon. Think of it as a slap upside the head from God—the more crates you collect, the more likely your next crate will be a fatal energy blast from above. In SOLE SURVIVOR, greed is *not* good.

You move your unit from a top-down perspective by simply pointing and clicking where you want to go. Targeting is a simple matter of clicking on your chosen victim. SOLE SURVIVOR has more of a learning ripple than a learning curve, and it lets you dive right into the fairly addictive action.

ALL TOGETHER NOW SOLE SURVIVOR's cooperative games are its high point. In this football game, the orange team pulls together to escort the flag bearer to the goal.

GAMES PEOPLE (IN TANKS) PLAY

At its most basic level, SOLE SURVIVOR is an exercise in dispensing, and avoiding, death. The core game is a free-for-all in which every man tries to rack up the most kills before time runs out. It's fun and tense, and the race for crates creates a sense of frenzy that would otherwise be missing in a game that doesn't exactly deliver speed.

SOLE SURVIVOR really shines in its cooperative games. There's a capture-the-flag option for up to four teams, but my favorite cooperative game is football. In football, two teams compete for one flag and carry it to end zones located at extremes on the map. Capture the flag games, which require more refined tactics, often degenerate into free-for-alls. Conversely, the football game generally rallies players together as they "block" and protect the "runner." It's a hoot.

Shooter fans might not like SOLE SURVIVOR's lack of real unit control, and some might find it a tad too one-dimensional. The game's only real problem is a common one: lag times that effectively paint a target on your back. If Westwood Online's latency indicators were more reliable, this would be less of a hindrance, but allegedly good connections can turn out to be really, really bad—which leaves you really, really dead.

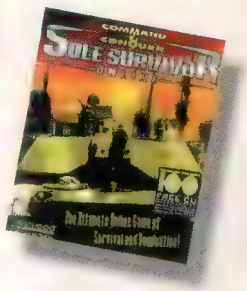
But once you find a good connection, SOLE SURVIVOR is perfect for a quick burst of addictive online fun.

APPEAL: Gamers looking for engaging, straightforward action.

PROS: Easy to learn; play is well-balanced; cooperative games are more fun than traditional deathmatches.

CONS: Bad lag times; Westwood's latency indicators not trustworthy; lack of more immediate unit controls.

CG RATED ★★★★



Price: $29.99
System Requirements: Pentium 90, Windows 95, 16MB RAM, 40MB hard-drive space, 1MB local bus DirectDraw-compatible video card, Sound Blaster and Direct Sound–compatible sound cards, 28.8 (or better) modem or direct Internet connection; Winsock 1.1 compliant TCP/IP stack; mouse.
3D Support: None.
Multiplayer Support: Internet (2–161 players); 1 CD per player.
Designer: Westwood Studios
Publisher: Virgin Interactive Entertainment
Irvine, CA
(714) 833-1999
www.westwood.com

DIFFICULTY LEVEL: ADVANCED

Nightmare in Westminster

Kalisto Takes You on an Up-and-Down Console Ride

by Thierry Nguyen

Nineteenth-century England was one of the most frightening times and places in history. During this period, horror exploded onto the scene in both fiction (with the publication of *Frankenstein, Dracula,* and *Dr. Jekyll and Mr. Hyde*) and real life (the notorious reign of Jack the Ripper). Superstitions about werewolves, vampires, and demons ran rampant in the collective psyche, and it's in this setting that the appropriately macabre NIGHTMARE CREATURES takes place.

OFF WITH HIS HEAD Some moves in NIGHTMARE CREATURES are deadly enough to hack bodies into pieces.

IT'S ALIVE!

NIGHTMARE CREATURES transports you to England in the year 1834. Our villain, Adam Crowley, works in the diabolical spirit of Dr. Frankenstein—using science to give life to creatures straight out of man's darkest fears. The game lets you portray either Father Ignatius, a monk with Shaolin-style training, or Nadia F., an American student who moonlights as a fencer and gymnast. As either character, you must pursue Crowley through various London locations and end his hideous experiments.

The game features 16 levels that are modeled after actual London settings, with a boss in every four levels. At the end of each level, you'll catch a glimpse of Crowley fleeing to another location, until you corner him in the game's last level. The graphics for the levels, especially when 3D-accelerated, are very atmospheric, with lighting and fog setting an appropriately gloomy mood.

NIGHTMARE FODDER

The gameplay mirrors that of TOMB RAIDER, but with some fighting-game additions. You explore the levels from a third-person perspective, and fight the creatures in close-quarters combat, using a variety of moves and combos. As a result of the fighting-game style of play, you'll usually confront a maximum of three opponents, rather than the legions of enemies found in other games. Boss creatures are less vulnerable to fighting moves, so you'll need special tricks to defeat them.

The fighting-game controls add a level of complexity not found in TOMB RAIDER's combat. Now, you can execute a combo that slams a staff into a werewolf's head, rather than merely firing your pistols a little faster. Your combos are augmented by a variety of power-ups that can blind, freeze, or decapitate the enemy.

Which character you choose affects gameplay: Ignatius has more powerful strikes, while Nadia has quicker attacks. And in a break from her fellow female combatants, who wear bras and short-shorts into battle, Nadia strikes a blow for common sense and wears pants.

HARD AS HELL

The main problems with NIGHTMARE CREATURES are its console sensibilities and its difficulty. On the PlayStation, it was already criticized for difficult combat; on the PC, it's even harder. If you don't have a gamepad, you'll have a hard time mastering the keyboard sequences that comprise the various combo moves—a necessity when you fight Crowley himself.

The save-game system is also a mess, as it forces you to save only at the end of a level. You also have an "adrenaline meter" that saps your life unless you kill something. Thus, free-form exploration is discouraged, as you need to kill to live.

NIGHTMARE CREATURES does a good job of adding a gloomy atmosphere and some variety to the 3D platform genre. If you're a console veteran, or don't mind console-style play, this is a good game to pick up. Just make sure you play with the lights off and the sound up.

Price: $49.95
System Requirements: Pentium 133, Windows 95, 16MB RAM, 20MB hard-drive space, 2x CD-ROM, Windows 95–compatible sound and video cards.
3D Support: Direct3D, 3Dfx, PowerVR, RIVA128.
Multiplayer Support: None.
Designer: Kalisto Entertainment
Publisher: Activision
Santa Monica, CA
(310) 255-2000
www.activision.com

APPEAL: Gamers looking for more horror-inspired gameplay in their 3D, third-person action games.

PROS: Atmospheric environment; new twist to genre with fighting-game moves; two good characters to play.

CONS: Limited save-game system; hard to control with the keyboard; hard game overall.

CG RATED ★★★★

Fallout™

A POST NUCLEAR ROLE PLAYING GAME

"The tightly integrated mix of combat, storytelling and puzzling keeps the pace brisk and lively, and it'll keep you coming back for more."

– PC Gamer (Rating 90%)

PC GAMER EDITORS' CHOICE

"It's a game that clearly was a labor of love...with humor, style, and brains to spare, and with a wonderfully refreshing emphasis on character development and decision making."

– Computer Gaming World (Rating 4-1/2 out of 5)

CG CHOICE

"In an age where many are predicting the death of traditional RPGs at the hands of multiplayer extravaganzas, Fallout is a glowing example of the genre, one which positively radiates quality."

– Strategy Plus (Rating 4-1/2 out of 5)

COMPUTER GAMES STRATEGY PLUS LAMP OF

"Interplay set out to create a 'real' RPG for the PC, and it's more than succeeded."

– GamePro (Rating 4.75 out of 5)

"Fallout is one of the finest games published this year, and is sure to be a serious contender for numerous Game-Of-The-Year awards."

– Online Gaming Review (Rating 9.5 out of 10)

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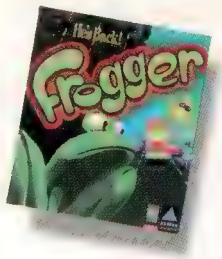
DIFFICULTY LEVEL: ADVANCED

Hop To It



by Joe Vallina

Price: $44.95
System Requirements: Pentium 100, Windows 95, 16MB RAM.
3D Support: 3Dfx.
Multiplayer Support: Hotseat (2–4 players), Internet, LAN, modem (2–4 players); 1 CD per player.
Publisher: Hasbro Interactive
(800) 400-1352
www.hasbro.com

When I first heard about Hasbro Interactive's remake of the classic computer game FROGGER, one word immediately jumped to mind: Why? Granted, FROGGER was a fun game in its time, but let's face it, you basically dodged cars. So why, with so many other exciting computer games out there, would I want to go back to a dusty old arcade game?

Well, through the wonders of 3D enhancement, the folks at Hasbro have taken the basic FROGGER theme and turned it into one of the most addictive, fun, and difficult single-player games I've played in a long time.

You're no longer relegated to jumping from point A to point B while trying to avoid becoming road-kill. Instead, you can jump up onto a bird's back and fly around trees, clouds, and chasms; or superhop your way onto moving machinery while on your way to rescuing five cute little frogs. Of course, you'll also be dodging boulders, snakes, and rats, and trying not to fall into lava or toxic waste, or off the edge of a frozen cliff. With these complicated, devious level designs, Hasbro has actually managed to turn FROGGER into a puzzle game—and it's a blast.

BIRD'S-EYE VIEW In FROGGER, you can hop onto the backs of birds to fly around the 3D environment.

Single-player FROGGER is great, but the multiplayer game is fraught with problems. For some reason, the designers declined to include the wealth of cool levels for multiplay, and the few that are available get old pretty fast. Also, in hotseat play, when you use the keyboard to control your frog, the split-screen is reversed. This means that when you use the left side of the keyboard, you control the frog on the right split-screen! Networked multiplayer games also have problems if one of your opponents is playing without a 3D card. The game seems to go to the lowest common denominator, which slows it to a crawl.

Keep in mind that a 3D card is virtually a necessity for FROGGER. Without one, the game is almost unplayable, and it looks so bad you wouldn't want to play anyway.

If you have a 3D-accelerated machine and are up for some hot single-player gaming, you'll love FROGGER. But if your rig is still 2D and you're a multiplayer maniac, don't bother.

APPEAL: Anyone who wants a great, single-player 3D puzzle game.

PROS: 3D looks great; addictive, fun single-player gameplay.

CONS: No 3D card, no FROGGER; a variety of problems in multiplayer mode.

CG RATED ★★★½

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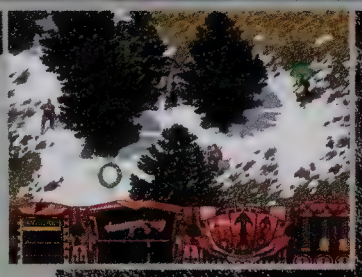
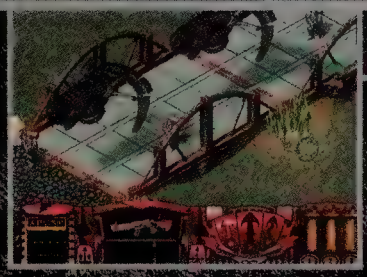




WaveQuest

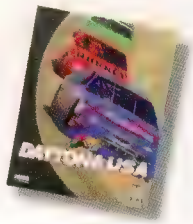
TERRA·VICTUS

ripcord

★★★ REVIEW • DAYTONA USA DELUXE

DIFFICULTY LEVEL: EASY

Start Your Engines...Again



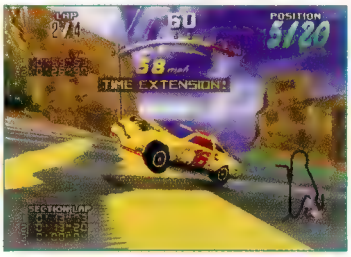
by Mark Clarkson

Sega's DAYTONA racing game is back on the PC a second time as DAYTONA USA DELUXE. It's an improvement over the last (disastrous) port. This time, you can race on one of six tracks: from ovalesque speedways to desert canyons to the seashore.

The eight cars vary in grip, speed, and acceleration, and you can fine-tune the handling quickness, suspension firmness, and front and back height.

The music is decent, though not spectacular, and I could have lived without the pit boss yelling the same things at me constantly, "Congratulations, your time has been extended! Congratulations, your time has been extended!" I generally played with the sound off and the radio on.

The graphics are neat, but flawed; textures warp and pixelate, and the sky pokes through seams in the road, cliffs, and scenery. The game lacks 3D hardware-support, although Direct3D support is promised in the future. Even without hardware support, the game runs fine on a Pentium 133—and screams on a PII/266.



CHECK POINT! DELUXE has DAYTONA's signature gameplay, good physics, and progressive damage.

My analog joystick, and the accelerator half of my CH pedals, worked, but I never got the brake pedal working.

DAYTONA USA DELUXE retains my favorite Sega Rally feature: the ghost car, which allows you to race against your own past performances.

Overall, while the game provides good, basic arcade racing, there isn't enough to distinguish it from similar offerings.

Price: $50
System Requirements: Pentium 90, Windows 95, 16MB RAM.
3D Support: None.
Multiplayer Support: Hotseat, modem, serial cable (2 players); LAN (up to 8 players); 1 CD per player.
Publisher: Sega 1-800-USA-SEGA
www.sega.com

APPEAL: Fans of DAYTONA looking for a PC fix.

PROS: It's DAYTONA, with an extra track and car customization.

CONS: Some graphics glitches and no 3D hardware support; same old DAYTONA.

CG RATED ★★★

★★★½ REVIEW • JET MOTO

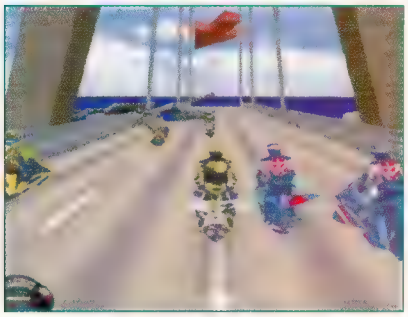
DIFFICULTY LEVEL: INTERMEDIATE

Speeding Moto-cycle

by Matthew Schaefer

Not just another "sport of the future" game, JET MOTO blends the '90s trend of "extreme" sports with the venerable tradition of arcade racing games, providing lightning-fast action to gamers ready for a refreshing take on PC racing.

A jet moto is a futuristic vehicle that's equal parts motorcycle, snowmobile, and jet ski. Players must race against 19 other jet motos at breakneck speeds through 10 complicated tracks of varying difficulties. Due to the jet moto's hybrid nature, tracks can consist of water, land, or ice, as well as contain any number of kinks, turns, drops, and imaginative obstacles. These 3D courses are breathtaking; in one course, you'll race along a windy river only to jump off a 100-foot waterfall before climbing up an equally steep dam.



START YOUR ENGINES JET MOTO provides some interesting and good-looking race courses, but the learning curve is pretty steep.

Racing on the jet moto circuit, however, requires more than swift maneuvering. The bikes are equipped with magnetic grappling devices for ultrasharp turns and turbo boosters for leaving the competition in the dust. After winning a full race season at the professional level, a "stunt racing" mode becomes available that enables you to further enhance your bike.

JET MOTO can be a difficult game, however. Learning to control the bike can present some problems. The challenge soon switches to winning all races against the speedy AI. This can become quite frustrating, as not all tracks are available to use until full race seasons are won at increasing levels of expertise.

With its sci-fi setting and radical vehicles, JET MOTO brings innovative console-style racing to the PC.

Price: $39.95
System Requirements: Pentium 90, Windows 95, 16MB RAM.
3D Support: 3Dfx, Rendition, Matrox
Multiplayer Support: Modem (2 players), LAN (up to 14 players).
Publisher: Sony (619) 824-5500
www.sonyinteractive.com

APPEAL: Action racers tired of driving stock cars on oval tracks.

PROS: Innovative, exciting course design; the novelty of a new vehicle to race.

CONS: Difficult learning curve spoils some of the action.

CG RATED ★★★½

The good news is, you finally figured out how to save the earth.

- Combines adventure and role-playing game genres.
- Richly detailed graphic environments.
- Complex puzzle solving unfolds engaging story line.

Some games suck you in so far you lose your mind in the process. Exactly what the new rulers of ALIEN EARTH count on. After a duck-and-cover free for all, only the strong have survived. Because now, it really *is* a jungle out there, humans are viewed as the ultimate Big Game, and you'll be pushed, dragged and hunted through extremes of hard-core, hardgore graphic terror. But sift through slews of clues and you'll get out of the woods, lead the resistance and commandeer the Alien Mothership. Simple. Just use your head. Or they will.

Do you really want to hear the bad news?

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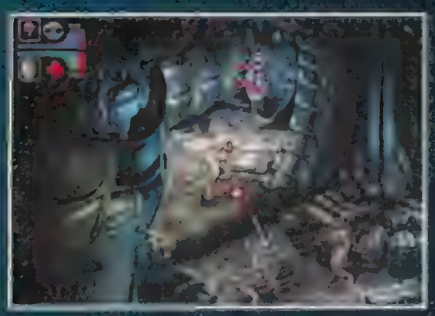

PC CD-ROM

ALIENEARTH

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DIFFICULTY LEVEL: INTERMEDIATE

Timeslip

Going Back to the Future Is Fun, But Not as Much as We'd Hoped

by Charles Ardai

Price: $59.95
System Requirements: Pentium 90 (P133 recommended), Windows 95, 16MB RAM, 70MB hard-drive space, 4x CD-ROM drive, high-color (16-bit) graphics, DirectX-compatible sound.
Macintosh: PowerPC (80MHz or faster recommended), System 7.5, 16MB RAM, 60MB hard-drive space, 4x CD-ROM drive.
3D Support: None.
Multiplayer Support: None.
Designer: Presto Studios
Publisher: Red Orb Entertainment
Novato, CA
(415) 382-4400
www.redorb.com

Here's a question that occurred to me while I was playing THE JOURNEYMAN PROJECT 3 LEGACY OF TIME: Why would time-travel technology ever get better? Just think about it for a second. At the start of the game, one character sneeringly dismisses the Pegasus technology you used in the original JOURNEYMAN PROJECT: "That old time machine? It's been shelved for ages." So, he offers you the spanking-new Chameleon Jumpsuit, which not only catapults you through time and space, it also allows you to take on the appearance of anyone who crosses your path. All well and good, but why didn't you have a Chameleon Jumpsuit in the first game? Couldn't the inventor have just popped the suit back in time a few years and thereby saved everyone a lot of trouble?

I know, this is not the sort of question you're supposed to ask. So here's one of a different sort: Do time-travel games ever get better? Considered solely from a technological standpoint, there's no comparison: The first JOURNEYMAN PROJECT was a bear to play. With barely adequate controls, you thumped along in your Michelin-man Pegasus suit through the thinnest of cardboard plots. The second JOURNEYMAN game, BURIED IN TIME, was a monumental improvement. Tiny graphics were replaced by gorgeous photo-realistic tableaux; a sleeker, less ridiculous-looking timesuit replaced the Pegasus; and if the game was still a bear to play, it was only a bear cub, since the designers had sanded down many of the game controls' rougher edges.

LEGACY OF TIME represents another quantum leap forward in technology. With the exception of forward movement, which still proceeds in awkward chunks, you flow through your environment like water through a sieve, your point of view banking and swooping with utter freedom. The exotic locations that you explore—the lost cities of Atlantis, El Dorado, and Shangri-La—are stunning. Best of all, you no longer have to skulk around avoiding human contact: There are plenty of characters to meet, talk to, and (thanks to your Chameleon suit) disguise yourself as.

POOLS OF RADIANCE The splendid graphics in LEGACY OF TIME vividly recreate the mythical cities of El Dorado, Shangri-La, and Atlantis.

AN OLD FAMILIAR TUNE

Once again, you play square-jawed timecop Gage Blackwood, Agent 5 of the Temporal Security Agency. When the new game opens, Gage has had the memory of his last adventure erased and is being ordered by his superiors to turn in his timesuit. No sooner has he complied than a pair of crises erupts: A rogue TSA agent is changing history in the 13th century and an unknown alien race is barreling toward Earth, leaving death and destruction in its path.

What can be done? Amid blaring Klaxons and submarine-style lighting, you (as Gage) bravely leap into the breach. After repairing the time disruption in 1262, you recover the time codes that the rogue agent has planted at the sites of the three legendary civilizations. Finally, you visit the lost cities before their destruction, searching for alien artifacts hidden in each city's holiest temple that could help humanity defeat its 24th-century adversary.

Problem is, we've seen this movie before. Both *Star Trek IV* and, more recently, *The Fifth Element* told the story of an indescribable, inexorably approaching alien menace that could be deflected only through use of a secret lodged in Earth's past. *Star Trek* had its crew of time-travelers disguising themselves as natives of an earlier era. *The Fifth Element* had exactly the same awkward blend of *Indiana Jones*–style pyramid prowling and lasers-and-spaceships futurism that LEGACY OF TIME sports, plus a very similar climactic scene in which the hero desperately manipulates the ancient artifacts until they combine in just the right way to repel the alien threat. Sad as it is to see a film end with a lame puzzle-solving scene, having a major new game end with what amounts to a variation on Rubik's Cube is sadder still.

And while the production values are high, they can't hide the holes in the script, which is a far cry from the deft wordplay of MONKEY ISLAND. Yes, the acting is professional for an adventure game—the characters' accents are particularly well done—but the performances too often go over the top. You'll find yourself reciting the clichés right

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Why Buried in Time is Better Than Legacy of Time

Buried in Time

- Puzzles derive naturally from setting and plot
- Costumes are authentic, interesting, and varied
- Historical settings (da Vinci's studio) were more intense
- Space station gave you problems to solve in the future
- Pacing was good, despite the clunky engine

Legacy of Time

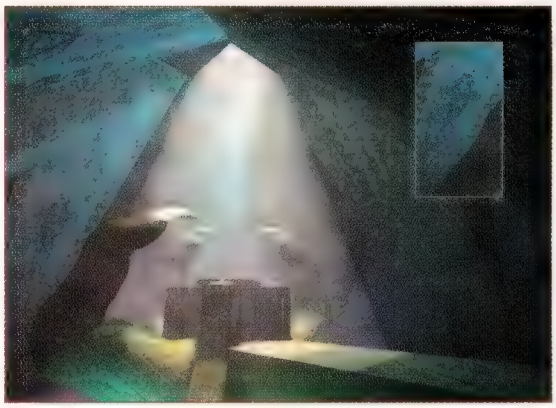
- Too many artificial adventure game puzzles
- Costumes reminiscent of Adam Sandler doing "Opera Man"
- Many games put you in fantasy settings, so what's new?
- Trips back to the future are mainly for exposition, not gameplay
- Too much backtracking to locations you've already seen

along with the actors: "We're making a tragic mistake, Jack!"; "Old friend, I need you to do something for me!"; "They have returned."

To be fair, LEGACY OF TIME's cinematic style contributes greatly to your gaming enjoyment (though it falls somewhat short of BLADE RUNNER, another atmospheric sci-fi game). The first time you use the mouse to turn your character's head and the stylishly letterboxed graphics obediently swing from side to side and up and down at every conceivable angle, your heart will race. Mine did.

PUZZLE PARADOX

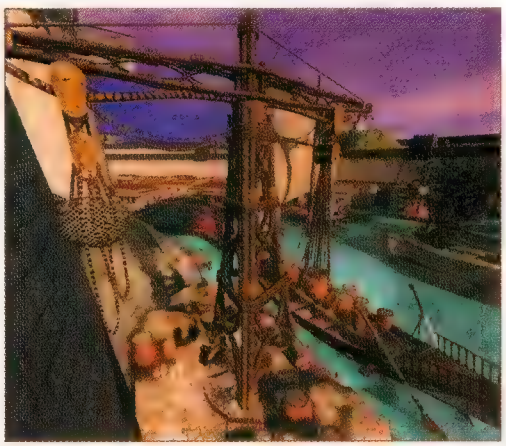
Given the superb graphics and enhanced game engine, you'd expect that the puzzles (a strong point of BURIED IN TIME) would be improved as well. Some puzzles are fine, but many involve tasks like fixing a broken gear assembly with a gear you find lying on the ground next to the assembly. In Shangri-La, you literally spend hours crawling through a maze of steam tunnels, opening and closing metal doors and gratings.



OUT OF TIME Some clues you find in the mythical cities are too corny even for a *Doctor Who* episode, as in this close-up of a timesuit painted on an ancient temple wall.

When the puzzles involve character interaction, they fare better, but you are still required to do far too much backtracking to locations you've already seen. (Six visits to the windmill in Atlantis is about four visits too many.) The first time you go anywhere the lush animation will hold your interest, but after that you'll play with one finger on the Esc key to cut them short.

Even with these annoyances, I daresay that anyone who liked RIVEN will like JOURNEYMAN PROJECT 3 LEGACY OF TIME as much, maybe more; it's a better-than-average MYST takeoff. But three years after BURIED IN TIME (see the sidebar), it's a disappointment to see this once-innovative series so emphasize style over substance. As recent adventure games have proven, there's no reason we can't have both.



TILTING AT WINDMILLS After a half-dozen trips back to the windmill, you'll feel like hopping that fishing vessel out of town.

APPEAL: Gamers who like MYST or sci-fi adventures.

PROS: Gorgeous settings; considerable freedom to explore; slick and professional.

CONS: Some banal mechanical puzzles; clichéd script; not up to BURIED IN TIME'S standard.

CG RATED ★★★

Real Time Real Strategy

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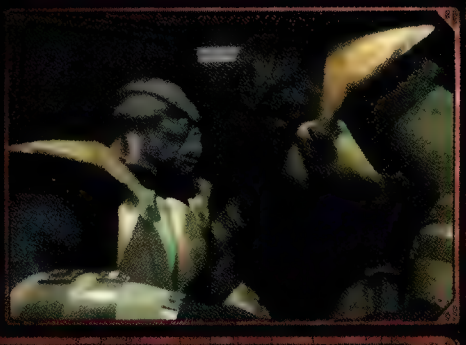

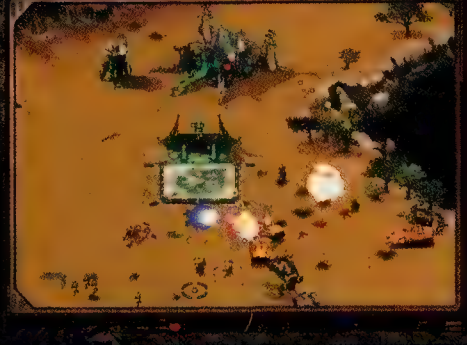

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A TODD PORTER GAME

DIFFICULTY LEVEL: EASY

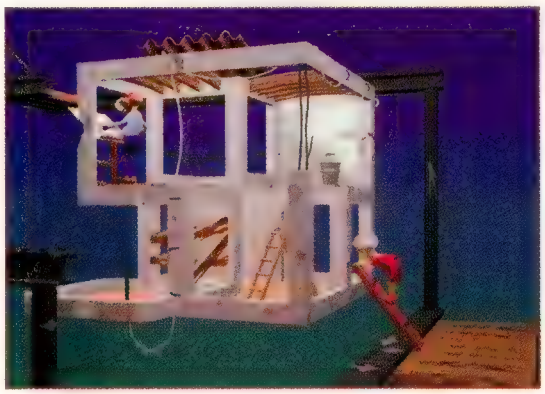
Unfunny & Repetitive

ARMED & DELIRIOUS Looks Great, but the Puzzles and Humor Are a Bust

by Barry Brenesal

Lately adventure gamers have been riding a modest wave of animated, surrealistic graphic adventures (THE NEVERHOOD and TOONSTRUCK are two examples). ARMED & DELIRIOUS is another foray into similar turf, which, unfortunately, doesn't succeed.

Here's the plot: The wealthy and eccentric Crotony family enjoys torturing and experimenting with animals. One rabbit has escaped, vowed revenge, and established an intergalactic empire, whose designs include the destruction of the Crotonys. The Great Rabbit gets the family's economic mainstay, George, to sell his relatives to the Great Rabbit in exchange for a planetoid sales concession. Meanwhile, Granny Crotony has discovered that her cookbook is missing—stolen by the Great Rabbit—and she sets off to recover it and her descendants.



THE PUZZLE PLACE Building a house, the Crotony Way. ARMED & DELIRIOUS features some good "how-to" puzzles.

PRETTY, BUT DUMB

The graphics are easily the most captivating aspect of ARMED & DELIRIOUS. They merge reality with Salvador Dali-style art and, to the game's credit, the Dali style usually comes out on top (especially after Granny leaves Earth behind). The 16-bit color palette is beautifully applied, and the limited 3D animation is excellent. Clearly, some very sophisticated artists were involved in this project.

The puzzles in ARMED & DELIRIOUS are more problematic. They're not so much difficult as they are obtuse, involving the manipulation of objects whose purpose is unexpected (for example, a set of mechanical stairs, when knocked over, interact with a huge gear). But often, objects are highlighted for interaction, yet Granny can't interact with them, and there are some puzzle solutions that are completely arbitrary. Granny can't leave Earth until she's acquired a group of specific objects from her house, even though you're never given a list of the objects, and they're of no use in getting off the ground.

Also problematic is the inability to identify with ARMED & DELIRIOUS' humans. Maybe I'm missing the obvious, but why exactly are we supposed to assist a family of animal torturers? Granted, this is a whacked-out cartoon universe, but we're still not given any reason to help the Crotony family. Even Granny, the best of the bunch, is unpleasant, stupid, and self-obsessed.

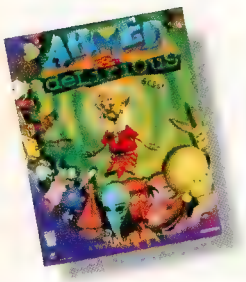
The next hurdle in ARMED & DELIRIOUS is its humor, or lack thereof. Since the dialogue is minimal, this means that the humor is basically slapstick, physical stuff, which is boring, repetitive, non-interactive, and has nothing to do with gameplay.

I have no problem with humor relating to bodily functions. It can be very funny when creatively applied, whether the medium is 13th century French fabliaux or *Ren and Stimpy*. But when Granny enters an attic, takes a slug from a brandy bottle, staggers about, farts loudly, and falls asleep in a chair, it isn't creative; it's just a cheap gag.

The occasional recourse to four-letter words in ARMED & DANGEROUS is cheaper still, because it's used strictly for thrill value. I guess the idea is that somebody in her 70s muttering "s**t!" will provoke gales of surprised laughter. Actually, I'd be shocked if an oldster *didn't* curse effectively, given the opportunities for colorful vocabulary gained after years of life experience.

NO DICE

There are some decent how-to puzzles in ARMED & DELIRIOUS, but funny it ain't; and frankly, I cheered throughout for the Great Rabbit. If you're looking for humor and puzzles in an entertaining, but bizarre, mix, check out THE CURSE OF MONKEY ISLAND.



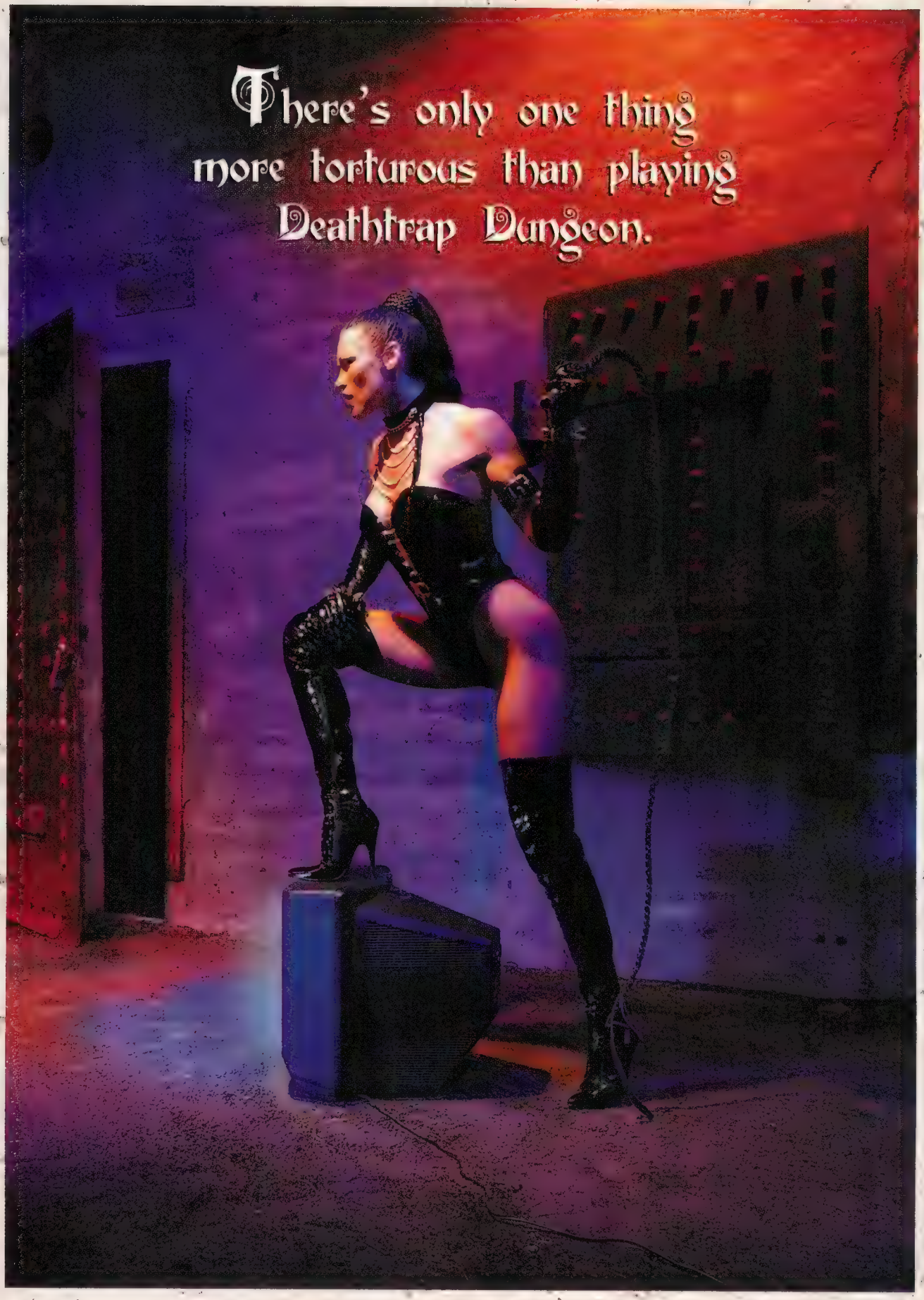
Price: $49.95
System Requirements: Windows 95, P100, 16MB RAM, SVGA graphics card, 4x CD-ROM drive, Microsoft-compatible mouse, Sound Blaster-compatible sound card.
3D Support: None.
Multiplayer Support: None.
Designer: Makh-Shevet Development
Publisher: Sir-Tech Software
Ogdensburg, NY
(315) 393-6451
www.sir-tech.com

APPEAL: Adventure gamers who enjoy great artwork.

PROS: Fantastic, surrealistic artwork; some intriguing how-to puzzles; good off-kilter soundtrack.

CONS: Despicable characters you're supposed to be helping; very labored humor; some puzzles have arbitrary solutions.

CG RATED ★★½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PC CD

PlayStation

IAN LIVINGSTONE'S

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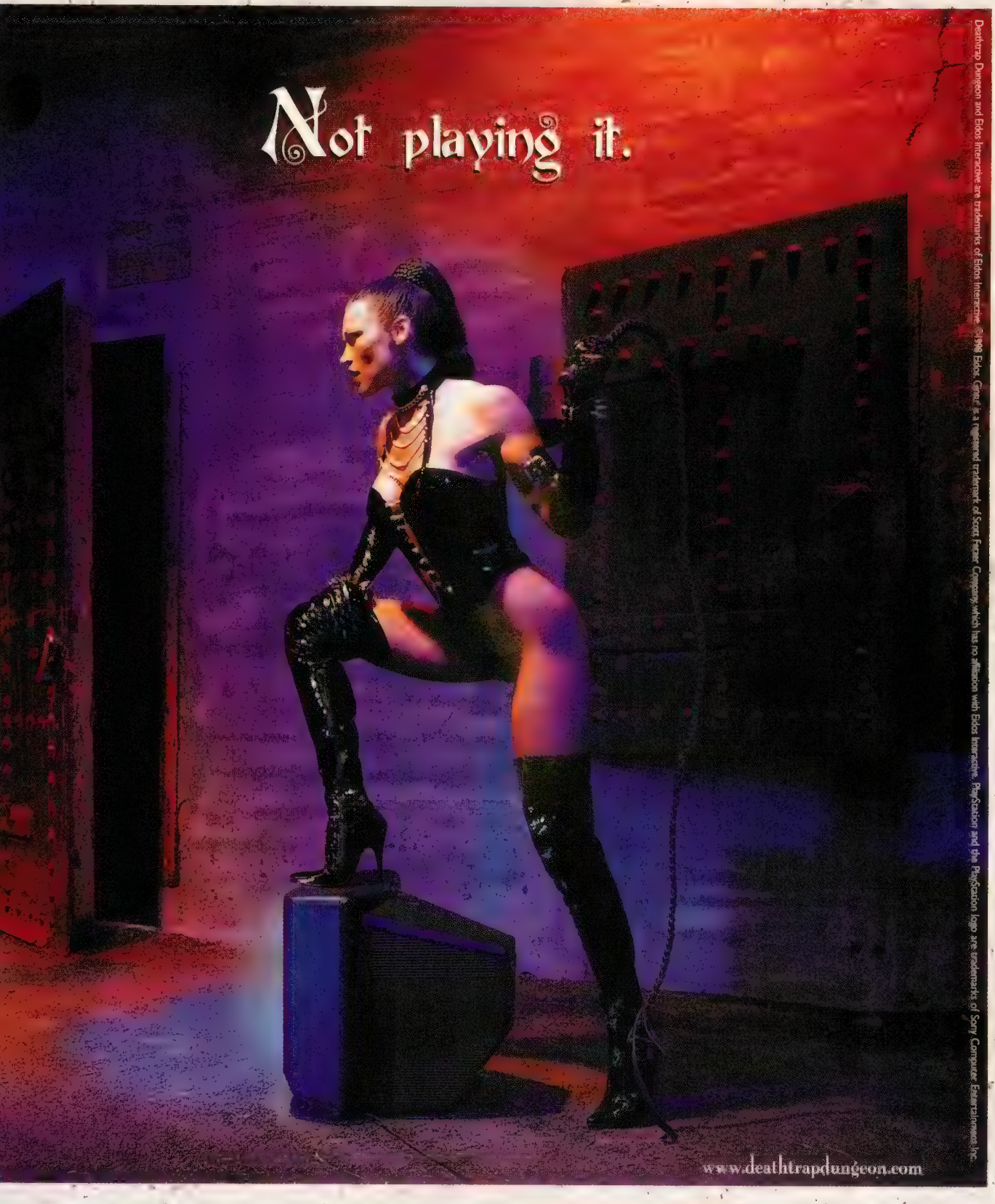

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your disposal. Or play the PC version and leave the other on-line players crying for more. Because in these 10 cavernous levels of evil traps, it's all about blurring that fine line between pleasure and pain. And just when you think you can't take it any longer, consider the alternative.

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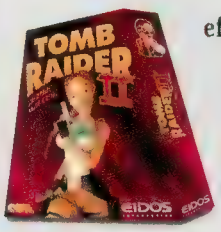
Research shows that the leading cause of depression among gamers is a noticeable lack of Eidos games. Fortunately, this deficiency can be treated both safely and effectively with games like Deathtrap Dungeon or Tomb Raider II. But early intervention is crucial. Or else, it's only a matter of time before they threaten to do something really stupid, like go to therapy.



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DIFFICULTY LEVEL: INTERMEDIATE

Flame On

Multiplayer Is Missing, but HELLFIRE Still Packs Some Good DIABLO Hack-and-Slash

by Scorpia

When DIABLO first came out a year ago, everyone was talking about it, but I couldn't play because I didn't have the necessary system. When I finally got my whiz-bang Pentium last spring, DIABLO was the first game I bought, and it didn't take long for me to become hooked. Very hooked. I loved the gameplay, the music, the graphics, the neat items — in fact, I liked almost everything about it.

So when the HELLFIRE expansion was announced, and I found out that it was being done by a third party — Synergistic Software — instead of Blizzard, I was a little skeptical. Could another company emulate the quality of the original game? Happily, Synergistic not only did that, they put in some enhancements to DIABLO that make playing it even better.

Price: $29.95
System Requirements: P60, Windows 95, 16MB RAM, 150MB free hard-drive space, 2x CD-ROM drive, Windows-compatible sound card w/DAC, mouse, SVGA video card. DIABLO CD must be in drive.
3D Support: None.
Multiplayer Support: None.
Designer: Synergistic Software
Publisher: Sierra On-Line
Bellevue, WA
(800) 757-7707
www.sierra.com

ON THE RUN

For starters, they revved up town movement. The docs say double-speed, but it looks more like triple to me. Those long, *sloooow* plods to the monastery or the witch are now like crossing the street. If you're injured, Pepin heals you automatically now; you don't have to ask for it separately. Griswold's stock of premium items is larger, and the fancy items stick around longer. You have a better chance of saving up for that nifty Crimson Armor of the Heavens or whatever else has caught your fancy. As before, the stock turns over only when you've gone up a character level.

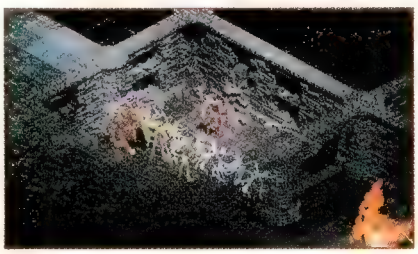
Sorcerers begin with new items. Instead of the Charge Bolt staff and two mana potions, they now receive two healing potions and a Staff of Mana, which (naturally) recharges the mana pool. While not as powerful as mana potions, the new staff allows the mage to stay down in the dungeon longer. Much of the running back to town every few minutes for more mana has been eliminated, which is a welcome change.

Several new shrines, as well as a bunch of new and unique items, were added to the game. I did not, alas, come across many of the unique items. In fact, the only one I can recall offhand is the light sabre. No, not a Jedi weapon, but a sabre that provides light in the dungeon and protection against lightning spells. Most of the new shrines give small boosts to stats; some also deal out damage when doing so.

New spells include Berserk (causes monsters to fight each other), Lightning Wall (like Fire Wall, only with lightning instead of fire), Immolation (a devastating fire attack that goes out in a circle), and Search, which temporarily highlights all items in the vicinity, making them easier to see.

Since HELLFIRE installs completely to its own directory — it doesn't touch your original DIABLO files — you have to copy over the save files for any high-level characters you want from DIABLO to HELLFIRE. The good news is, the characters come over with their levels and stats intact. The bad news is, no items come with them. Armor, weapons, potions, scrolls — everything goes away. Only gold makes the trip. The manual advises loading transfer characters with money beforehand, and I heartily endorse that advice. Fortunately, Griswold's stock of premium items will reflect your character's level, and you should be able to buy some decent equipment from him.

MEDITATE ON THIS! The new Monk character is a far cry from a meek pilgrim. He can attack barehanded or hit multiple enemies with one blow of his staff.



CAN THOR DO THIS? One of HELLFIRE's new spells is the Lightning Wall, which will electrocute anything in its path.

WE GOT THE MONK

HELLFIRE's really new features are two dungeons of four levels each, and a new character class, the Monk. The Monk is one *very* hot character. Weaponless or with staff in hand (his preferred weapon), he's a tremendous fighter, especially at higher levels. He can hit as many as three opponents at once with the staff or barehanded (actually barefooted, since weaponless attacks are kicks, not punches).

Monks get automatic increases to damage range and armor class as they

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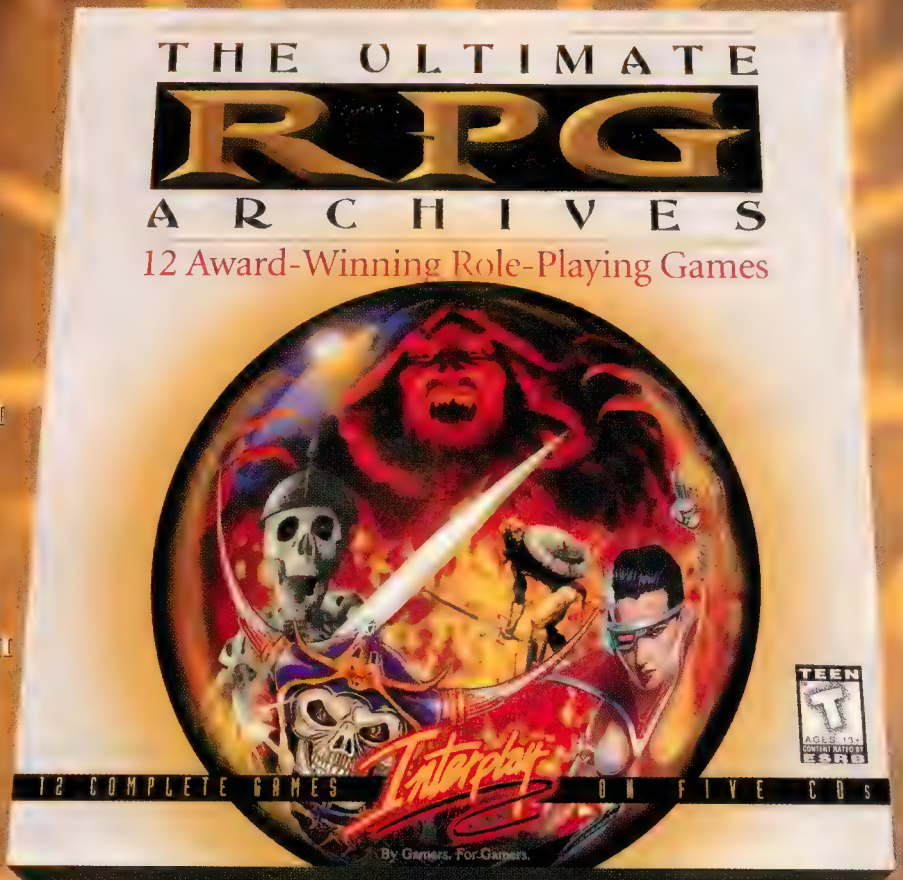

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GIVE YOUR ANT A KISS The Torch Ant, a new denizen of the Hive, will greet you with flaming fireballs.

go up in level. Eventually, unless he has a really potent staff, his barehand damage will exceed weapon damage. Heavy metal—ring, chain, splint, and plate armor—does not work well with Monks. It may even degrade their armor class. Therein lies the tradeoff: Most of that high AC comes from agility bonuses, not actual protection. Ergo, when a Monk takes a hit, whether physical or magical, it will hurt him more than it would a Fighter or Rogue wearing, say, plate mail; there's not much armor to soak up the damage.

The first new dungeon, The Hive, is an icky-looking place, with a layout similar to the hot levels under the Monastery—all wide open, with not many places to hide. Most of the monsters here are the up-front, fighter type. They come right for you as soon as they see you. Five, however, are more dangerous than others: Spider Lords (a spitter-class critter), Psychorbs and Necromorbs (floating eyes with a magic attack), and Torch Ants (emphasis on torch, as they chuck fireballs your way). At the bottom of the Hive is the Defiler, an exceptionally nasty critter. This thing has to be killed, as it holds the item to open the Crypt.

The Crypt is a very tough place—the lower levels in particular are easily the equal of the Hell levels under the Monastery, and the denizens here are not to be trifled with. Their hit points average around 100 or better, and many have spell resistance and immunity. They also hit fairly hard.

NA-KRUL—SISSY DEMON

At the bottom of the Hive is Na-Krul, the new demon. Killing him does not initiate any special sequences; he's really only a way station on the path to Diablo. Na-Krul is one of the game's big disappointments. He's supposed to be The Demon Too Hot for Diablo to Handle. He's the critter Diablo couldn't kill and had to banish. After that buildup, finding him to be, in actuality, a grade-A creampuff was a terrible letdown. The Monk kicked his face in without even raising a sweat. The Rogue turned him into a pincushion with no trouble at all. The Sorcerer fried him to a grease spot, and he didn't need a lot of mana to do it. Only the Fighter, who had to be in close (without the Monk's dodging ability) took a few lumps from Na-Krul. Even so, it was not an epic encounter by any means.

The other disappointment is the fact that HELLFIRE is single-player only. There are no modem options at all, so you won't be able to play this on battle.net or with a friend on a dial-up connection. I can see how trying to link up HELLFIRE with original DIABLO might be a problem, but the lack of any modem play in HELLFIRE is astonishing, especially as multiplayer mode is one of DIABLO'S biggest selling points.

Even so, HELLFIRE is still a first-class job. The new graphics and music are on a par with DIABLO. The enhancements to the original product, plus the new material and new character class, have really freshened up the game.

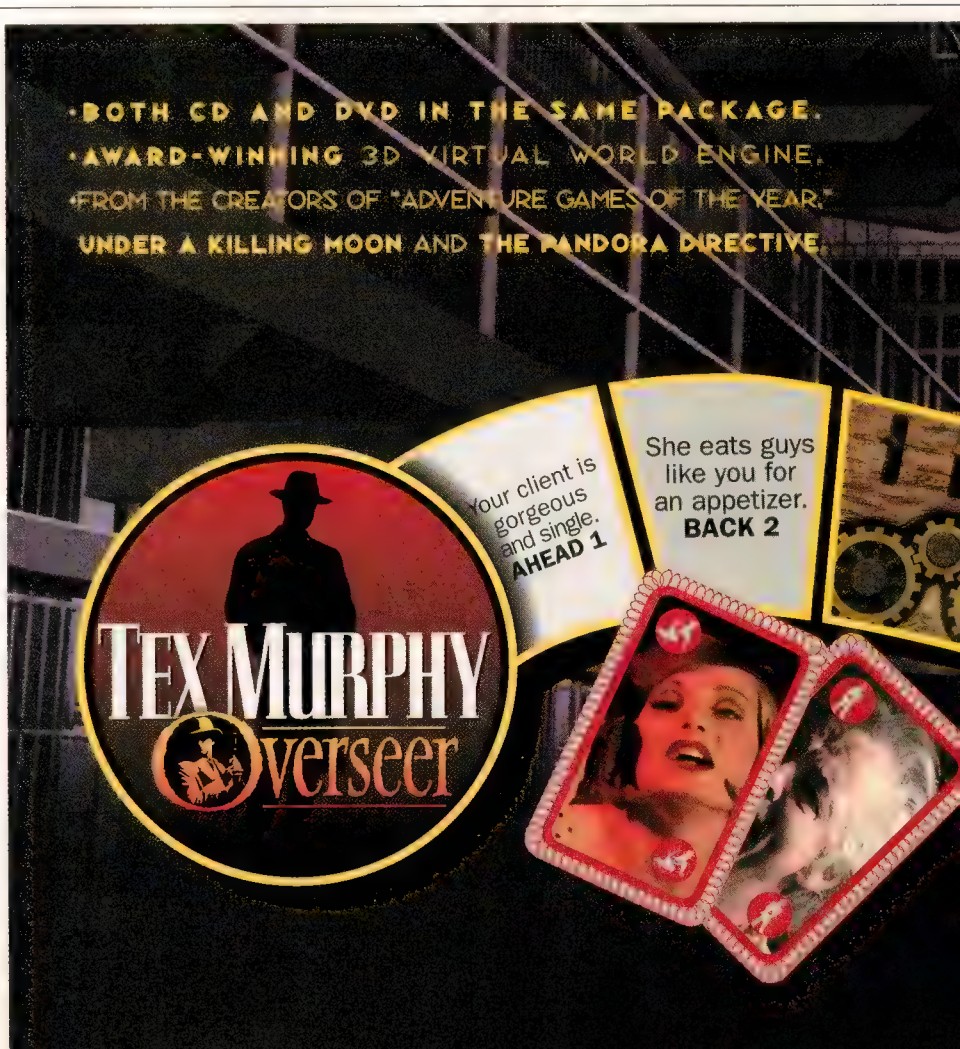
HELLFIRE is a welcome expansion on a great theme, and one that single-player DIABLO fans shouldn't miss.

APPEAL: DIABLO fanatics who just can't get enough.

PROS: Nice enhancements, such as faster town movement, to original DIABLO system; lots of new spells and items to play with; interesting new character class.

CONS: No multiplayer mode whatsoever; end boss is a big disappointment.

CG RATED ★★★★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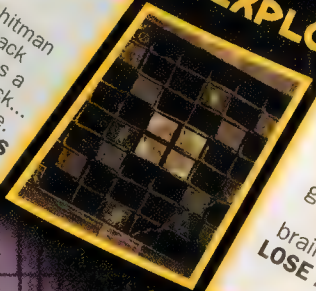

A mad scientist gives you a wicked brain cramp.
LOSE A TURN

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AHEAD 1/2

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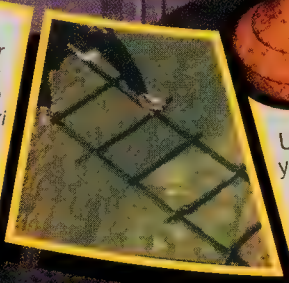

Unfortunately, you left it back at the office.
BACK 1

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DIFFICULTY LEVEL: INTERMEDIATE

CGW CHOICE

Ship Shape

A New Development Team Breathes Fresh Life Into the WING COMMANDER Series

by Scott A. May

It seems impossible to imagine a WING COMMANDER game without creator Chris Roberts at the helm. But that's a reality that fans must face, much like accepting any actor but Sean Connery as the true James Bond. However, for better or worse, 007 movies continue to do well, and so does Origin's flagship series. Truth be told, WING COMMANDER PROPHECY, guided by director Adam Foshko and lead programmer Peter Shelus, fares much better than expected.

Roberts, who left Origin last year to form Digital Anvil, evolved the WING COMMANDER series from its comic-book inception to a quasi-Hollywood production in later episodes. Most fans were pleased by the series' development, though many felt basic gameplay suffered from Roberts' newfound filmmaking aspirations. In this regard, Foshko and Shelus have returned the series to its roots, where gameplay takes precedence over FMV diversions. Longtime fans of the series should be pleasantly surprised.

Price: $54.95
System Requirements: Pentium 166 (Pentium 133 with 3D card), Windows 95, 32MB RAM, 150MB hard-drive space, SVGA 16-bit color video, 4x CD-ROM, mouse, joystick.
3D Support: 3Dfx, Direct3D.
Multiplayer Support: None.
Designer: Billy Joe Cain
Publisher: Origin
Bellevue, WA
(800) 245-4525
www.origin.ea.com

NEW FACES

The game features a familiar branching story structure, whose path and ultimate outcome are determined by decisions you make during the course of the game, as well as your performance in each of more than 50 missions. Unlike in previous episodes, the plot here is not so cut-and-dry. You assume the role of 2nd Lt. Casey (played by Steven Petraca in the FMV sequences), a young volunteer fresh out of Academy, eager to prove himself in battle. As the son of Iceman—a central character from the first game in the series—you're also forced to prove your individual merits to skeptical rookie and veteran pilots, who suspect you're simply riding the heroic vapor trails of your late father.

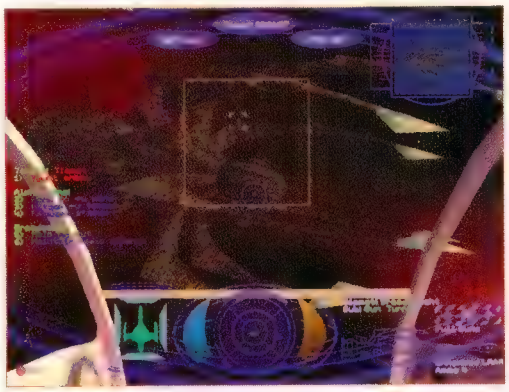
Set aboard the Terran Confederation's new supercarrier, the TCS *Midway*, the game begins with reports of an unknown alien force devastating the once-powerful Kilrathi star system. Based on projections of the aliens' path of destruction, it appears they'll soon be heading into Confederation space, with Earth as their ultimate target. Only the *Midway*, with its crew of greenhorns and seasoned pilots, stands a chance of stopping this alien menace.

TWO PEAS FROM THE POD Tom Wilson reprises his Maniac role, as your character and his swap fighter-jock stories.

The game begins with a full-motion video tour of the pilot quarters on the *Midway*, which also serves to introduce new and old characters, such as Maniac (Tom Wilson), Rachel (Ginger Lynn Allen), Drake (Lauren Sinclair), Maestro (Neill Barry), Hawk (Chris Mulkey), and Dallas (Joel Stoffer). Mark Hamill also makes a token appearance as Blair, hero of the first four episodes.

The FMV sequences, directed by Foshko, are a mixed bag of good and cheesy. On the positive side, the settings and costumes are the best of the series' later FMV-enhanced games, featuring many genuine studio sets, as opposed to WCIV's entirely computer-generated green-screen backdrops. Overall, the video portions of the game feel more tangible than before. On the negative side, the FMV scenes consist of a young, mostly unknown cast whose acting abilities pale in comparison to previous stars such as Malcolm McDowell and John Rhys-Davies. Indeed, much of the dialogue and character interaction has a certain *Melrose Place* feel—which in itself isn't bad, just different.

Luckily, these cinematic interludes are typically short and sweet. Gamers also have the ability to adjust both movie and in-flight communications to suit



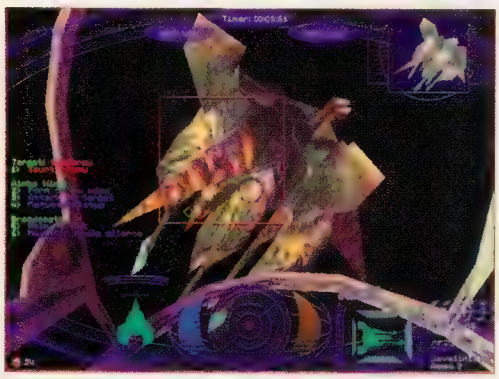
MOTHER OF THE SEA The Tiamat-class Dreadnought demonstrate WCP's sense of scale, as this ship fills up your viewscreen from 30,000 klicks away.

A Dark, New Menace

The story, by Adam Foshko, Chris Douglas, and Paul Wattenbarger, evokes a sense of mystery not found in previous episodes. The alien species—including its background, motives, and ultimate intent—remains enigmatic throughout much of the game, which heightens WCP's sense of discovery and terror. Renowned sci-fi artist Syd Mead, famous for his production design in the films *Blade Runner* and *2010*, conceptualized the alien race, which is much more organic and sinister than the cartoonish Kilrathi space cats.

BEHOLD THE KRAKEN Kraken-class ship killers provide one example of the new alien race's power.

their needs and preferences. Options include enabling all between-mission movies and in-flight messages, playing only those movies and messages critical to plot advancement, or disabling both features entirely. To get the full flavor, regardless of your experience with the WC series, the best option is to enable all video sequences on your initial run. Thanks to the game's branching story line and multiple paths to different endings, replay value is high, which means you can then reduce or eliminate superfluous cinematics in later sessions.



STING LIKE A BUTTERFLY Unique and colorful ships like this Stingray sometimes are more than they appear—this ship is the result of three ships combining into one.

PLACES TO GO, ALIENS TO KILL

Aboard the *Midway*, Casey has access to key areas such as the Ready Room, where you can attend mission briefings, load previously saved games, and enter the Rec Room. Here you'll find food, drink, and FMV conversations with other crew members. Again, although these cinematic exchanges are optional, they help flavor the story line, draw players deeper into the action, and sometimes reveal intriguing character-related plot twists.

The Rec Room features the familiar killboard, which lists current kills for all *Midway* squadrons, and a tactical database, which offers 3D views and stats on every Confed fighter and capital ship in the game. Finally, there's the combat simulator, where rookie pilots can practice basic flight and combat maneuvers within a safe environment.

The game begins with a series of sorties, designed to train you in the fine art of following navigational waypoints, escorting fighters, defensive engagements, and hyperjumps. After Mission 5, however, things get hairy.

Unlike in previous games, players are rarely allowed to choose which fighter they pilot. Instead, your fighter is automatically assigned, based on skill level and mission objectives. The cockpit display varies slightly from one ship to the next, but all feature basically the same array of controls, monitors, alarms, and heads-up readouts. In all, there are 7 new Confed ships to fly, including fighters and bombers, and more than 10 new alien ships to battle. Unlike the last episode, you can't choose your wingmen here. On the upside, however, your wingmen are more plentiful and much more intelligent than before, requiring fewer communications to keep them on track.

SPECIAL EFFECTS

The game's retooled flight engine feels great. Thrust, inertia, pitch, rotation, and roll make flight more engaging than in previous installments, whether they're employed during prolonged dogfights or carefully staged bombing runs. There are no planetary missions this time out, but they aren't missed. Instead, you get Cap ships, some nearly 20,000 meters long, rendered to scale in realtime. Visually stunning, they can easily take you more than three minutes to traverse, bow to stern.

Visual effects are the best yet seen in a space-combat game. WCP supports most major 3D accelerated video cards, which lets the game run fairly smoothly even on a Pentium 133. The 3D effects include textured space—no more pitch blackness—lens flares, missile trails, translucency, muzzle flash, haze, and some of the most mind-blowing explosions this side of a Hollywood film. And that's just the tip of the iceberg. Damaged ships break apart, spew fuel, or emit sparks from missing sections. And you'll even encounter alien ships that transform themselves into bigger, deadlier opponents. There's so much eye candy that gamers will constantly find themselves muttering a hushed "Wow!"

WING COMMANDER PROPHECY, actually the first episode in a proposed new trilogy, successfully returns the series to its solid roots, while moving forward in terms of story line and graphic splendor. Chris Roberts is sorely missed, but his brainchild continues to grow in very capable hands.

APPEAL: Rocket jockeys and fans of previous installments of the WING COMMANDER series.

PROS: Best FMV in series to date; greater emphasis on gameplay; outstanding graphics and sound; vastly improved combat mechanics.

CONS: Hefty system requirements; once-promised multiplayer options aren't in the game.

CG RATED ★★★★

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DIFFICULTY LEVEL: INTERMEDIATE

The Baron Flies Again

The Sequel to the Flight Sim Classic Needs a Few Patches on its Fabric Wings

by Robin G. Kim

Few would disagree that RED BARON is a true classic among flight simulations. The 1990 release was a rare gem that did almost everything right, expanding the envelope in terms of graphics, realism, and breadth of gameplay. In the long-awaited sequel, RED BARON II, Dynamix has attempted to recapture the magic of the original while incorporating enough improvements to satisfy gamers' ever-increasing expectations. Alas, though the game comes tantalizingly close to achieving these goals, it falls short due to significant flaws that could have—and really should have—been avoided.

As with its predecessor, RBII's strengths lie in its immersive atmosphere and enormous scope, which span the entire course of history's first air war. From the slick interface graphics and music to the wealth of background information on WWI and the aces who fought in it, the out-of-cockpit experience is brimming with enough period feel to put even jaded simmers in the mood for flying. In addition to a customizable instant-action dogfight option, 27 canned missions are included, plus a powerful (but buggy) mission builder to let you create your own.

The heart of the game, however, is its dynamic campaign mode. To embark on a campaign, you must create a pilot record. You specify for which country you will fly (France, Britain, Germany, or America), your enlistment date, initial rank, and squadron affiliation. Because a campaign continues until the war ends or your pilot is incapacitated or killed, it will often require a substantial time commitment—sortie counts can easily run into the hundreds! Unfortunately, a recurring crash bug can make further progress impossible if it strikes, forcing you to restart the campaign.

Missions vary from routine patrols to balloon busting to infantry support. Preflight briefings list waypoints, altitudes, and formations to be used. This information can also be conveniently accessed in flight, eliminating the need for memorization.

After a mission, a play-by-play animated debriefing recaps the highlights of the flight, compensating somewhat for the lack of a mission recorder. Since many flights last well over an hour of game time, RBII provides up to 16x time compression and three autopilot modes to speed you through the really boring parts.

INSTRUMENTAL Realism fanatics can opt for the bare bones instrumentation real WWI pilots had to work with, but two modern dashboard layouts are also provided for those who prefer not having to guess at their airspeed.

HISTORICAL CORRECTNESS

As only one squadron among many, there is no way to change the overall course of the war, but your efforts are not entirely inconsequential. While squadron and ground unit placements proceed inexorably according to history, famous aces can be shot down prematurely, and damage to balloons or ground structures carries forward to future missions. Within your squadron, successes are rewarded with decorations, promotions, authorization to paint your aircraft (requiring the use of an external paint program), and leadership responsibilities such as mission planning and pilot management.

Over 20 different scouts (single-seat fighters) can be flown in the sim, from the pioneering Morane-Saulnier—the first true fighter plane—to the awesome late war Fokker D.VII. As new types are introduced over the course of a campaign, you experience first-hand the effects of the see-sawing struggle for technological advantage waged throughout WWI. An assortment of AI-controlled reconnaissance planes and bombers may also be encountered, but there is a lack of Zeppelins.

CASUALTY OF WAR The game's hit detection and damage modeling are second to none.

Price: $54.95
System Requirements: Pentium 133, Windows 95, 16MB RAM, 130MB hard-drive space, SVGA 256 color video, 4x CD-ROM, mouse; joystick recommended.
3D Support: None.
Multiplayer Support: Modem, null-modem, LAN, Internet (2–16 players); 1 CD per player.
Designer: Dynamix
Publisher: Sierra On-Line
Bellevue, WA
(425) 644-4343
www.sierra.com

Unfinished Business

Sierra has apparently decided to complete RED BARON II's development in stages—after putting it on store shelves. Current plans call for three major patches. The first, a beta version of which was available at ftp://ftp.dynamix.com/RedBaronII/ at press time, fixes most of the worst bugs (game crashes, self-resurrecting aces, blocked campaigns, flights circling endlessly over the starting aerodrome, and time compression not deactivating when enemies are near) and adds several welcome enhancements. For those who dislike virtual cockpit panning views, the set of fixed views has been expanded to offer total coverage akin to that found in AIR WARRIOR and WARBIRDS, albeit with a clunkier interface. Screen shaking now presages stalls, warning you to back off before it is too late. Brightly colored tracer graphics make gunnery easier, though much more frequent gun jams will force you to fire in shorter bursts. The infernally accurate groundfire has not been toned down, but flight altitudes have been increased enough that you will be able to avoid the worst of it. You can also reduce its effectiveness manually by creating a new file called rb2sim.ini and populating it with the following (lines must be double-spaced to work):

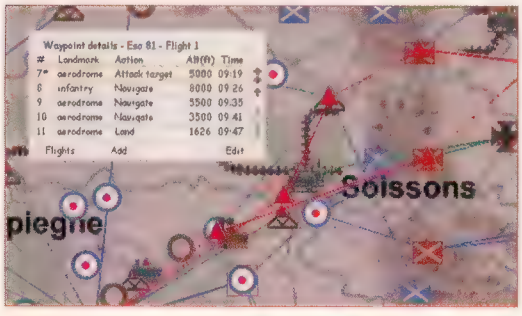
[Baron]
bulletMassFactor = 180
groundGunnerBase = 800
groundGunnerNoise = 180
groundGunnerConvergence = 160

The next patch will feature recalibrated flight-model parameters for far greater realism in aircraft behavior. The final patch, expected mid-year, adds support for 3D accelerator cards.

Multiplayer fans will find they have their own set of patches. Although several head-to-head (but not cooperative) multiplayer options are available, they require a different downloadable patch just to work at all, and will need more fixes before they are stable.

Although the planes are pleasant to fly and each different type has a distinct and convincing feel, the flight model is too forgiving to be truly realistic, even at the most authentic setting. Stalls and spins are very tame, and the vertical performance of most planes is overdone.

Fortunately, these lapses detract little from the sim's exceptionally fun dogfights; the main consequence is to give you a slight edge over the computer opponents. The AI's ability varies, but you may be thankful you have that edge when facing one of the more formidable aces. Despite its combat prowess, the AI occasionally messes up at simpler tasks, blithely navigating into steep hills, refusing to take off, or augering in when fighting at low altitudes.


Waypoint details - Eso 81 - Flight 1
Landmark Action Alt(ft) Time
7* aerodrome Attack target 5000 09:19
8 infantry Navigate 8000 09:26
9 aerodrome Navigate 5500 09:35
10 aerodrome Navigate 3500 09:41
11 aerodrome Land 1626 09:47
Flights Add Edit
Soissons
piegne

MISSION: POSSIBLE Complex missions are a snap to create using the mission builder's optional ability to start you out with a full set of historically-appropriate flight plans.

Part of what makes RBII's air combat so immersive is the complete situational awareness provided by its effective combination of fixed and auto-tracking padlock views. Accurate hit-detection and outstanding damage-modeling also contribute. Depending on where and how hard a plane is hit, it might suffer various degrees of control degradation, wing spar breaks, weakened or lost wing sections, or oil leaks that can potentially lead to raging engine fires. If your engine erupts in flames, you generally have two options: Burn to death or bail out without a parachute. Choose wisely.

Graphically, the fully texture-mapped sim environment is attractively detailed and functional. However, without 3D-card support it can't match the visual splendor of its 3D-accelerated competitors. Frame rate on a Pentium 166 system at moderate detail settings is adequately smooth, with occasional slowdowns. The clouds that appear in screenshots on the game box were yanked out for performance reasons, which is probably just as well. Making up for the less then stellar graphics, RBII boasts an impressive array of sound effects: Wing spars creak when about to give out; air-raid sirens blare from threatened aerodromes; and crashing aircraft snap, crackle, and crunch as they cartwheel to pieces across the rolling French countryside.

WORK IN PROGRESS

RED BARON II is a diamond in the rough. Underneath its bugs, slightly dated visuals, and minor idiosyncrasies, it still manages to capture the spirit of the original RED BARON. A noteworthy achievement as is, it has the potential to follow its progenitor as a true giant among flight sims, but only if Dynamix comes through with its promised flight model, multiplayer, and 3D-accelerated graphics patches.

APPEAL: Anyone with an interest in prop-driven fighter combat who doesn't demand 3D card support.

PROS: Great atmosphere; very large scope; dynamic campaign and mission builder provide enormous replay value; good dogfighting AI.

CONS: Several crash bugs; simplified flight modeling; lack of 3D card support; no multiplayer campaigns.

CG RATED ★★★

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DIFFICULTY LEVEL: INTERMEDIATE

Pro Pilot Took Off Before the Flight-Testing Was Completed

by John Nolan

The marketing wizards at Sierra unabashedly boast that "Sierra Pro Pilot is the most technically accurate, intellectually demanding and authentically true-to-life flight simulator available for the home PC." If only it were so! This long-awaited civilian flight sim had the benefit of starting with a fresh design, free to "be all that it could be." Alas, the opportunity slipped away.

IN THE DETAILS Pro Pilot features incredibly detailed, legible instrument panels, and almost everything works with the click of a mouse.

HEARTLESS

The core of any flight simulation is the flight model; without a quality flight model it becomes just another a game. Pro Pilot is proof that some producers either don't have a grip on the importance of an accurate flight model or don't feel it's necessary to provide both simplified and detailed models. The Cessna 172 is a common civilian aircraft, one in which many pilots and potential Pro Pilot buyers have some experience. Fail to model this aircraft accurately and the credibility of the entire simulation is called into question.

The Cessna 172 in Sierra's Pro Pilot is not particularly well-modeled. A brief "familiarization flight" consisting of takeoff, departure, slow flight, stalls, spins, steep turns, and a descent to approach and landing reveals quite a few shortcomings. There's no yaw when you put the power up for takeoff. Once airborne, if you turn without using rudder, the ball quickly centers without any pilot input. The pitch attitude in slow flight is almost identical to normal cruise, "hands off" stall recoveries with no altitude loss are routine, and the aircraft can't be put into a fully developed spin. On approach, lowering the flaps doesn't seem to add any drag until you reach the full down position. These characteristics imply a casual approach to the flight model, indicating that the entire lift/weight/thrust/drag relationship needs work before Sierra can rightly make its "true-to-life" claim.

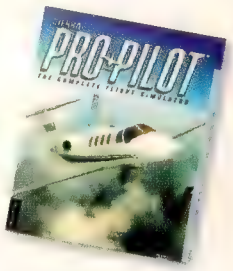
OUT OF THE PICTURE

Another critical element is the graphic environment. Once again, Pro Pilot fails to maximize its opportunity. While the environment is sufficiently detailed at maximum settings, the graphics not only don't advance the state-of-the-art, they don't even *reach* the state-of-the-art. Low-altitude landscapes are blocky and pixelated. Cranking the graphics options to maximum presents a severe challenge to average computers—views are slow to change and there are noticeable pauses with the "Typical" 52MB installation. Installing all the scenery helps, but requires about another 450MB of hard-drive space. Tweaking the options menu will eventually result in a usable frame rate that may or may not provide the amount of detail that you personally require. Clearly, Sierra missed the flight when it decided to forgo 3D acceleration. It's incredible that this one shipped without it; flight simulation video requirements make it almost mandatory.

IN THE DIRT Most major airports have *paved* taxiways. Is this another indication that Pro Pilot was rushed to market?

THERE'S STILL HOPE

The program does have several positive aspects. The Ground Lessons are well done. Thirty-one video lessons cover various aspects of flying, with most lessons running about two minutes. The



Price: $54.95
System Requirements: Pentium 90, 16MB RAM, 30MB hard-drive space, 2x CD-ROM, sound card with DAC, SVGA 256 colors 640x480, mouse.
3D Support: None
Multiplayer Support: None.
Designer: Dynamix
Publisher: Sierra On-Line
Bellevue, WA
(800) 757-7707
www.sierra.com

PATCHWORK QUILT Terrain is best viewed from a high altitude; at low altitude it just doesn't look very realistic, as this shot from 2,000 feet reveals.

animation is very good, usually displaying interior cockpit control movements and corresponding exterior-view aircraft reactions while the instructor gives the briefing. These movies are useful for both the sim and for actual flying; it's clear Sierra did its homework in this area. Still, if you think you're going to learn everything you need to know about landings in two minutes, it's time for a reality check.

The Air Traffic Control feature is another plus; it adds important realism to the simulation. Alas, there are glitches, such as when the controller keeps repeating the "Climb to 7,000 feet" instruction for several minutes after you've leveled off. It just doesn't respond to your actions as well as the ATC in FLIGHT UNLIMITED II did, which lends a "canned" feel to the experience.

Perhaps the best part of PRO PILOT is the Flight Assignments section found in the Flight Companion handbook; finally there's some interesting flying to do in a civilian flight sim. These 20 cross-country trips are flight-planned and come with reasonably detailed written instructions on what to do and expect on the trip. The Air Traffic Control feature ties in with the flight plan, and you hear realistic instructions from the controllers. Of course, as with the rest of the program, there's evidence that the developers made last-minute changes. The book descriptions often don't match the controller's instructions, another example of the lack of testing that went into this game. These "missions" are the future of this simulation; as inevitable revisions improve the flight model and graphics, this feature could move PRO PILOT to the head of the pack.

POSTFLIGHT DEBRIEFING

This is not a true "flight simulator"; the flight model is just too far into the arcade category to meet those high standards. Now you know why Sierra has a flashing "Beyond Real" graphic on its PRO PILOT Web page; the flight model is so far beyond real that it's unreal. Still, the flight characteristics are satisfactory for casual users.

Graphics are about average, but it's the lack of 3D acceleration that really makes the biggest visual statement in PRO PILOT. It's not a positive comment; the current crop of inexpensive state-of-the-art 3D accelerator cards make this a colossal oversight.

On the bright side, PRO PILOT is a good cockpit procedures trainer; the complexity of the cockpit modeling and the checklist feature set new standards that competitors will be forced to match. A fairly complete set of airports across the U.S. and accurate terrain elevations mean that most American gamers will be able to practice flying from their local airports. Furthermore, the documentation is a cut above the competition in this category. The Flight Assignments section of the Flight Companion is especially noteworthy; this genre has needed something like it for quite some time. Overall, the simulation shows promise, but it appears this fledgling was kicked out of the nest a bit too soon.

APPEAL: Civilian flight-sim fans and student pilots willing to work with a sim still under construction.

PROS: Realistic, educational Flight Assignments; good ground lessons in movie format; excellent flight-companion handbook.

CONS: Flight model won't satisfy realism devotees; desperately needs 3D acceleration; graphics are just average; ATC system has sluggish, rigid AI.

CG RATED

Do It Right or Do It Over

In a sad commentary on marketing department influence on game release dates, Sierra released a major patch for PRO PILOT (visit www.sierra.com) very soon after the game's release. This is a "good news/bad news" situation. It's great that the developers immediately went bug hunting, but it's inexcusable that they shipped this program with so many defects. The READ.ME file for the patch details 34 bugs that were stomped. Some of these problems were truly minor, such as getting the correct takeoff time in your logbook when taking off from nontower airports. But far too many of the problems were major, like correcting drag characteristics on all five aircraft and fixing the Baron so that it didn't run out of fuel in 20 minutes. The patch improves the flight model; the 172 demonstrates a torque effect on takeoff and the drag effect of the flaps is enhanced. While the flight model still needs work, at least Sierra admits it needed improvement. It's incredible that such problems are even present in a nonbeta release. As Cliff Shiers, the best navigator I ever flew with, used to say, "It's always easier and usually cheaper to do it right the first time!"

...YARMOOR [YELLOW] DEFEATS FLATLINER [BLACK] IN A SANCTIONED MATCH ON SOLARIS...

Stone -GrpW-> -----: Where did DW's Banshee go?
JT Chance -GrpW-> -----: It shredded my gyro!
I'm out! DEAD!
Stone -GrpW-> -----: I'm gonna need help
- who's left?
HELLO?

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DIFFICULTY LEVEL: INTERMEDIATE

The Sky's Unlimited

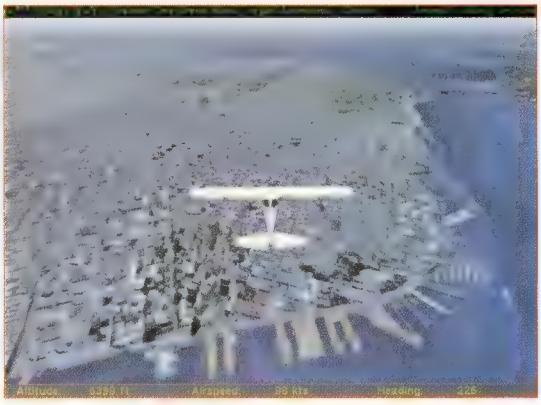
CG CHOICE

Noncombat Flight Sims Take a Big Step Closer to Reality

by Denny Atkin

In real life, most of us are never going to get a chance to fly in a high-performance fighter jet. But as unglamorous as taking the controls of a Cessna 172 Skyhawk may seem to gamers trained at the controls of virtual F4U-1 Corsairs or F-16 Falcons, piloting a *real* plane—even an unarmed one over friendly territory—can be quite thrilling. Taking in the scenery of your neighborhood from 3,000 feet while watching for other air traffic is more exciting than even the most harried computer air combat when you factor in reality.

I've flown nearly every civilian flight simulator ever released, from the original FLIGHT SIMULATOR to SOLO FLIGHT to the latest FLIGHT SIMULATOR 98, and none of these has captured the exhilaration of real flying. They're great for learning instrument procedures and general plane handling, but with unrealistic air traffic (or none at all) and no communications, it's as if you're flying in a *Twilight Zone* episode in which your Cessna is the only plane left in the world. It's an odd world at that, one where you get excited by seeing one recognizable skyscraper in a city full of boxes in a land of patchwork-quilt terrain and polygonal mountains.



CITY SLICK Polygonal buildings dropped on satellite imagery make this the best-looking San Francisco yet seen in a sim.

Now, for the first time, a flight simulator has captured the real feeling of civilian flying. With the most detailed, vivid environment ever to grace a flight sim, FLIGHT UNLIMITED II is the closest you'll get to knowing what it's like to fly a small plane, short of a visit to a flight school.

SMALLER SCOPE

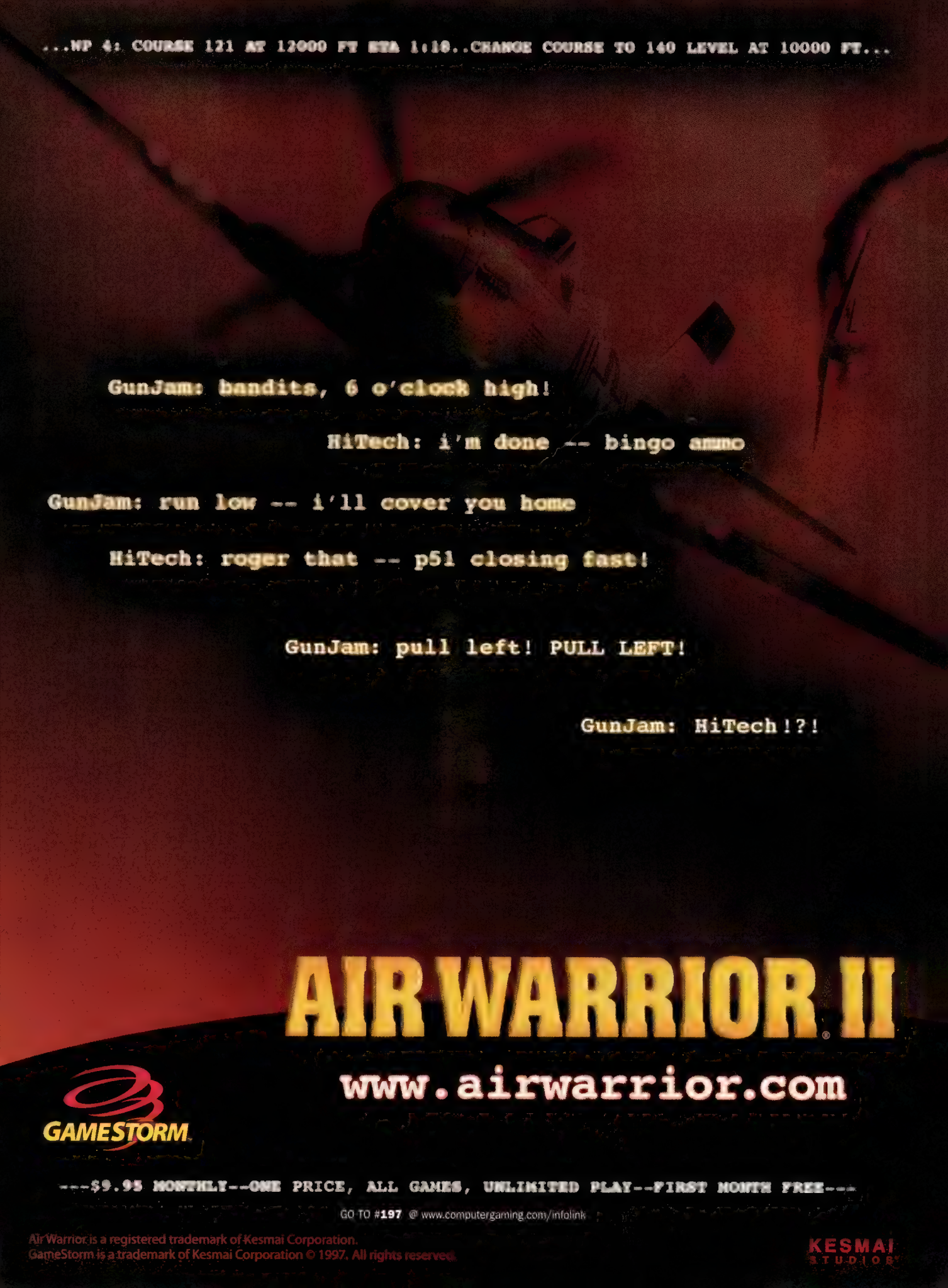
To be fair to the competition, FLIGHT II manages this level of detail by providing a very limited flight area—the San Francisco Bay Area, from north of Calistoga south to Monterey and east to Sacramento. The designers have used detailed satellite imagery to map the ground, with many buildings and landmarks represented in detailed polygon form. Once you get up above 1000 feet the view, with a resolution of 18 feet of real terrain per pixel, is startlingly realistic. And while 18 feet per pixel may not seem that detailed, it makes it possible to pick out major highways, large buildings, small parks, and other prominent landscape features. I easily spotted my apartment building and was able to follow a road from the lighthouse at Point Reyes to a hotel I'd stayed at 20 miles away. This is the first simulation in which sightseeing is more than just trying to find where the programmers have thought to place a set of polygonal buildings.

This detail is available with or without 3D acceleration, but if you're using a supported Direct3D video card, the image will be improved through pixel filtering and a smoother color palette. I tested FLIGHT II on a P166, and frame rate was good with or without 3D acceleration. Even at 800x600 resolution, I got around 17fps without 3D acceleration; 24fps with.

Of course, FLIGHT II represents each of the Bay Area's 40-plus airports in full

Price: $49.95
System Requirements: Pentium 120, Windows 95, 16MB RAM, 190MB hard-drive space, 4x CD-ROM drive, sound card, mouse; joystick recommended.
3D Support: Direct3D.
Multiplayer Support: None.
Designers: Looking Glass Studios
Publisher: Eidos Interactive
San Francisco, CA
(800) 617-8737
www.lglass.com

STORM WARNING Rain and lightning effects are dramatic and realistic, but what are you doing in these skies in a Cessna?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GunJam: run low -- i'll cover you home
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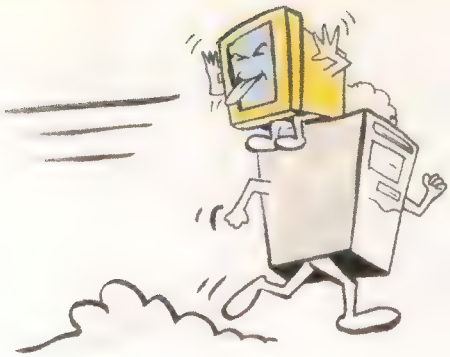

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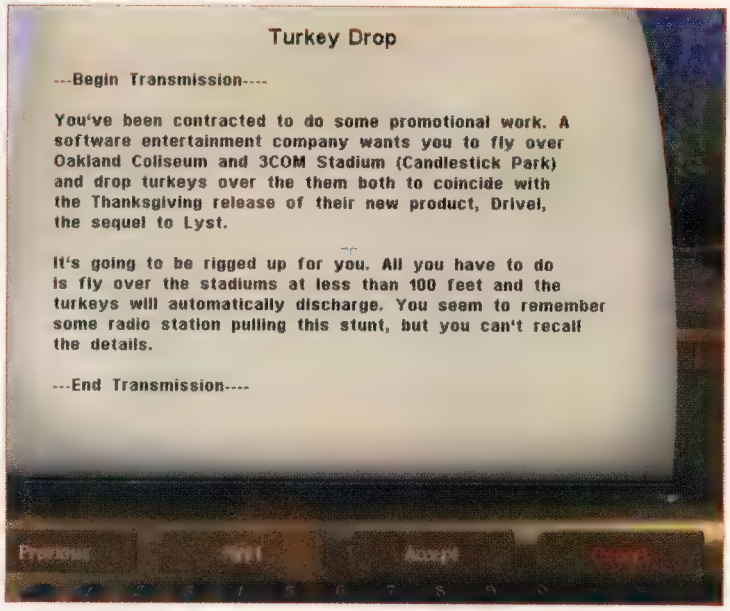
detail, complete with accurate taxiway layouts. One nod to playability is the inclusion of very large taxiway marker signs—so large, in fact, that you can clip off your wing on one. (The first patch allows you to shrink the marker size, trading readability for realism.)

THE RADIO DIAL

The detailed environment provides one level of immersion; this is enhanced by interactive air traffic control (ATC) and dozens of other aircraft sharing your airspace. The ATC is a snap to learn: You "build" requests and responses from a menu of appropriate choices, much in the manner of the LucasArts SCUMM adventure system. For the most part, the ATC is very good at responding appropriately to your actions, even warning other planes that there's a "disoriented aircraft in the pattern" when you buzz an airport and ignore tower requests.

You'll need to wait your turn to communicate with ATC—there can be as many as 200 other aircraft in the Bay Area airspace at any time, taxiing around airports, flying approach or departure patterns, or simply transiting the area. These range from other general aviation planes to airliners and military jets. One great touch is the ability to pop into the cockpit of any other plane in the area as an observer. Watch a 747 through takeoff and climb, or sit in a Baron as it enters the approach pattern and lands. Riding along in other small planes is great for getting a visual illustration of how approach patterns work.

You can file IFR (instrument flight rules) flight plans specifying your route, or you can just turn off your radio and fly visually around the area. For the first time, you can actually practice entering an approach pattern with other aircraft.


Turkey Drop
---Begin Transmission----
You've been contracted to do some promotional work. A software entertainment company wants you to fly over Oakland Coliseum and 3COM Stadium (Candlestick Park) and drop turkeys over the them both to coincide with the Thanksgiving release of their new product, Drivel, the sequel to Lyst.
It's going to be rigged up for you. All you have to do is fly over the stadiums at less than 100 feet and the turkeys will automatically discharge. You seem to remember some radio station pulling this stunt, but you can't recall the details.
---End Transmission----

SOMETHING TO DO FLIGHT UNLIMITED II includes a variety of adventures; some are realistic, such as landing in heavy fog, while others are more fanciful, such as helping prisoners escape from Alcatraz or doing the Turkey Drop.

The weather effects in FLIGHT II are amazing, with rain splattering on the windshield and lightning in the skies. You'd probably never *fly* one of these planes in such severe weather, but the effect is still dramatic (and much safer than trying to experience it in real life.)

THE PLANE TRUTH

Flight models are fairly good—much better than PRO PILOT, although not up to the level of FLIGHT SIMULATOR 98. Stalls seem well modeled, but it's far too difficult to spin most planes unless you alter an .ini file. There are lots of nice effects, such as jetwash when you fly or taxi your tiny civilian plane too close behind a jumbo jet.

You can fly a Cessna 172 (referred to here as a "Trainer 172," perhaps due to licensing issues with Cessna), a Piper Arrow, a Beech Baron, or an amphibious De Havilland Beaver (which you can indeed land on water). There's also a P-51D Mustang, but alas it's unarmed, so you'll need to use the kamikaze approach to down airliners. Instrument panels are nicely done, with fluid movements on instrument readouts. The instrument stack is fairly complete, although it lacks an autopilot.

There are a few disappointments here. Although there are runway lights at night, the Bay Area seems to be under constant blackout conditions. And many non–Bay Area residents will find it a downer not to have their local airport included. However, Looking Glass has made provisions for both third-party aircraft and terrain add-ons, and the first new terrain area is already in the works.

FLIGHT UNLIMITED II is a must-have for any general-aviation enthusiast. If you're set on having large terrain areas and your local airport, then by all means pick up a copy of FLIGHT SIMULATOR 98 or PRO PILOT in addition, but don't miss this one.

APPEAL: **Anyone interested in flying small (unarmed) planes.**

PROS: **Unprecedented terrain detail; interactive air traffic control; busy skies; amazing weather effects.**

CONS: **Limited terrain area; no city lights at night; slow virtual cockpit.**

CG RATED

Truly Unlimited

Did you know that you can try your hands at the controls of a real plane for less than the cost of FLIGHT UNLIMITED II? Many local flight schools offer introductory flights for only $35. (To get more information about this special offer, go to **www.beapilot.com**.) While you may not have the approximately $4,000 it generally takes to get your private pilot's license, you shouldn't miss this inexpensive chance to take the controls of a real plane. Once you do, you'll be hooked on the real thing.

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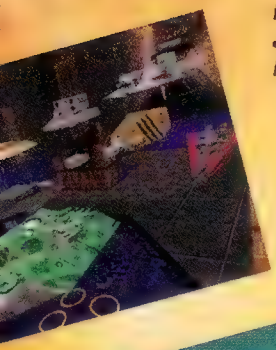

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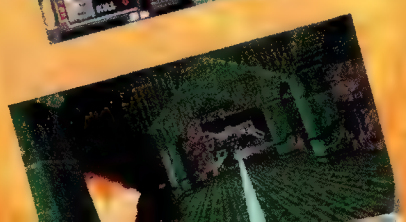

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No Strikes Here

DIFFICULTY LEVEL: INTERMEDIATE

JOINT STRIKE FIGHTER Hits a Home Run

by Scott A. May

The F-22 won't be the most advanced aircraft in the sky for long. Next year, that title will shift to the Joint Strike Fighter, a new fighter/attack aircraft being designed for the Navy, Air Force, and Marines. This high-tech fighter's advanced avionics will enhance the fighter's handling, navigation, survivability, and lethality. These characteristics have allowed Eidos to create a game that's instantly accessible, even to novice pilots, without it necessarily being unrealistic. So if JOINT STRIKE FIGHTER seems to fly like an arcade sim, there's good reason.

COMBAT RANGE

Developer Innerloop has designed JSF as a relatively mainstream combat sim. Newbies are able to jump right into deadly dogfight action, matching wits and firepower with the likes of Su-35 Flankers and MiG-29 Fulcrums, with minimal preflight briefing from the game's excellent 144-page manual. Veteran pilots, on the other hand, will enjoy the campaign editor, multiplayer options, and bounty of skill settings.

Pilots can choose between the Boeing and Lockheed-Martin candidates for the JSF contract; informational videos give the background of each plane. Skill settings let you toggle novice-friendly options such as automatic target leading, easy landings, wind, turbulence, and fadeouts, plus five levels of enemy abilities.

Gameplay is divided into three sections: dogfight, campaign, and multiplay. Dogfight drops you instantly into aerial battle over one of four theaters of conflict: Afghanistan, Colombia, Korea, or the Kola Peninsula. Dogfights can be used for training or merely to get a quick action fix without launching a full-blown mission. Options available during dogfights include time of day, weather conditions, and number of enemy aircraft. Two of the most interesting dogfight settings are Guns Only, which disables air-to-air missiles for more close-in-and-personal aerial duels; and the ability to take wingmen into the fray, which simulates full-fledged squadron-level dogfights.

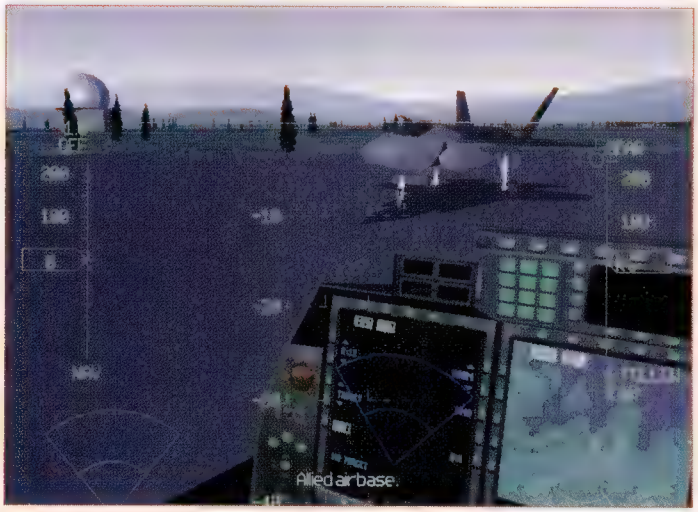
Multiplayer games allow up to eight players to compete in either cooperative or competitive dogfights, over LAN or Internet connections. Two-player head-to-head battles connected via modem or serial cable are also available. All previous dogfight options apply to multiplayer battles, with the addition of time/kill limits and arcade-style, on-the-fly refueling and ammo replenishing.

Campaign play is definitely the highlight of JSF, consisting of multiple missions flown in one of the hypothetical scenarios. What's unique here is the freedom allowed in choosing mission tactics. Although the overall campaign goal is pre-scripted, how you complete each individual mission is entirely up to you. The Mission Planner screen features a topographical map of the region, with icons designating enemy and allied units, waypoints, and target objectives. Edit mode features a point-and-click interface that lets you easily draw your own flight paths, set waypoints, and select targets. Along the way you can also access detailed information on targets, terrain, and opposing forces. Regrettably, there's no multiplayer provisions for campaigns.

SOUND AND FURY

Designed for both air-to-air and air-to-ground combat, the JSF features a 1,850-round 20mm cannon and the plane can carry more than 13,000 pounds of ordnance, including a variety of next-generation "smart" bombs and missiles. As in proposed real-life battle scenarios, your JSF often flies with the support of F-22 Raptor wingmen. Radio communications and wingman control options are surprisingly elaborate for such a mainstream sim, featuring an array of formation, engagement, navigation, and status requests. Communication with nearby towers and AWACS also plays a big part in mission success. The plane uses "smart skin" antenna arrays built into the fighter's hull.

Innerloop's ISF graphics technology makes jittery frame rates and close-up



VIRTUAL VIEW JSF's virtual cockpit features functioning instruments as well as a helmet-mounted HUD display.

Price: $49.95
System Requirements: Pentium 133 (P100 with 3Dfx card), Windows 95, 16MB RAM (32MB recommended), 40MB hard-drive space, SVGA 256 color video, 4X CD-ROM, mouse; joystick recommended
3D Support: 3Dfx
Multiplayer Support: LAN, Internet (2–8 players); 1 CD per player
Designer: Innerloop
Publisher: Eidos Interactive
San Francisco, CA
(800) 617-8737
www.eidosinteractive.com

Cheats and Tricks

Between dogfights and multi-mission campaigns, take a break to try out these two hidden goodies in JOINT STRIKE FIGHTER:

• Start a campaign and bail out, preferably over an airbase or nearby city, then guide your pilot's parachute to the ground. While most flight sims end the mission upon touchdown, JSF actually lets you walk anywhere, à la DOOM, with pistol in hand. Granted, you can only shoot at planes and structures, but it's still a kick. It also gives you the opportunity to view the game's detailed graphics—trees, buildings, and the like—up close and personal.

• The other trick requires a helping hand—or very long fingers—but is well worth it. In the Pilot Select screen, hold down both Ctrl keys while selecting your aircraft. You can now choose to fly any of the available aircraft in the game, including Soviet MiGs, B-2 bombers, and Bell helicopters. You won't see a cockpit display, but otherwise, each aircraft is fully functional. Switch to an external view to confirm your new craft. This undocumented feature is a great way to liven up dogfights or put a new twist on campaigns.

HUEY RIDE The "fly any plane" cheat even lets you take helicopters into combat.

pixelation a thing of the past (note that the frame rates here are much faster than those in the demo version released a few months back). Capable of resolutions up to 1024x768 and 16-bit color depth, this could be the most intricately detailed flight sim that doesn't require a bleeding-edge PC to appreciate. The ISF technology also means that realistic ground texture—all 10 million-plus square miles of it—looks as gorgeous at 10,000 feet as it does at a mere 100 feet. No pixelation. No jagged edges. No bull.

JSF supports 3Dfx Voodoo video cards for optimal graphic speed and detail. But if you've not bought into 3D yet, don't fret. Even without hardware acceleration, Innerloop's software-only graphics engine delivers a surprisingly rich environment and decent frame rate. I ran the game on a crotchety old Pentium 133, using a generic 2MB SVGA card, and was shocked at how beautiful the game looked at 640x480 resolution and 16-bit color. Special effects such as lens flares, missile trails, and water reflections came through just fine. And despite an occasional visual stutter, the animation was fast and fluid.

On the other hand, when loaded onto a Pentium 233 MMX machine, with 64MB RAM and Monster 3D video, this sucker screams. Special weather effects, such as rain, snow, and fog, also give the game extra visual punch. The sensation of speed is incredible, especially during low-altitude flight (which is a breeze with the JSF's terrain avoidance features). Indeed, this sim's arcade feel is true-to-life, based on advanced technology, not sloppy programming.

Enemy AI is tenacious, but not overly punishing—until you venture deep into higher campaign missions. Multi-function Displays (MFDs)—attack, strategic, offensive, control, status, and info—can be viewed either full-screen or in virtual cockpit mode, along with head-mounted targeting displays. The game features more than two dozen real-time views, including player, wingman, external fly-bys, missile, satellite, target, and ground vehicles. Also, Missiles produce wonderful translucent trails and solid, realistic explosions.

SMOOTH FLYING JSF maintains a fairly smooth frame rate, even on unaccelerated systems.

FICKLE JOY

One of the game's few problem areas is its fickle control configuration, which tends to lose joystick settings from one session to the next. Even when properly configured, the game sometimes fails to recognize certain button functions, such as the hat switch on my CH Combat Stick. Otherwise, joystick control is tight and responsive.

Although the JSF is a strike fighter, your wingmen seem interested only in air targets. So you might as well plan to bring along F-22s as wingmen and take on the responsibility of air-to-mud combat alone.

Exceptionally fast, user-friendly, and loaded with visual eye candy, JOINT STRIKE FIGHTER takes the lead in the next generation of mainstream air combat sims. If you've been daunted by steep hardware and skill requirements in the past, this sim's for you.

APPEAL: **Beginner- or intermediate-level combat pilots looking for an easy-to-fly plane and a game with replayability.**

PROS: **A real speed demon, with or without 3D hardware; beautiful graphics; mission editor adds depth and replayability; realism and skill options galore.**

CONS: **No multiplayer campaigns; control setup slightly flawed.**

CG RATED

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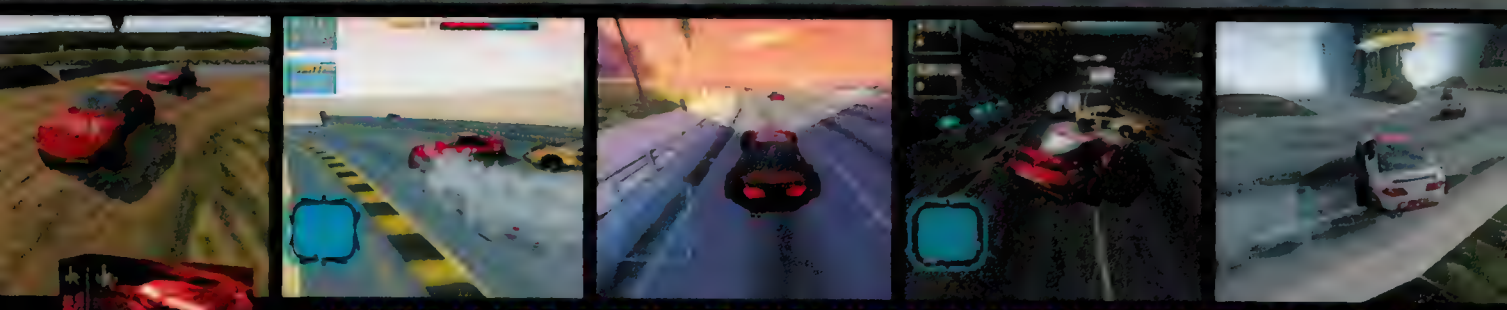

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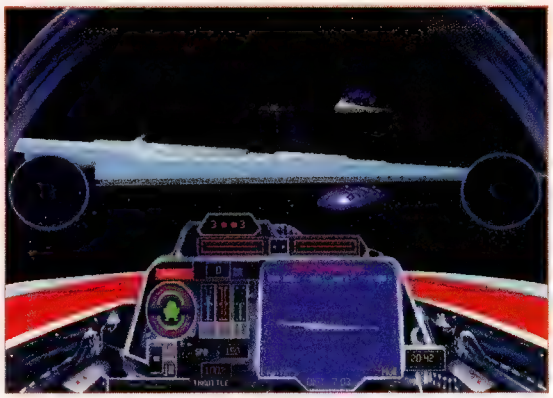
DIFFICULTY LEVEL: INTERMEDIATE

Can Solo

LucasArts' Space Sim Gets an Injection of Solo Play Value

by Thierry Nguyen

X-WING VS. TIE FIGHTER was set to enter the space-sim arena as the ultimate *Star Wars* sim. After all, who could resist the idea of a multiplayer TIE FIGHTER? Unfortunately, the space sim was severely lacking in single-player gameplay, and had little of the feel or immersion of the previous game. Though it was a pretty good multiplayer game, there was little incentive to play the game alone. But now, with the BALANCE OF POWER (BoP) expansion pack, the game is worth booting up even without a net connection.



BIGGEST STAR OF ALL For anyone who's ever wanted to fly with or against a Super Star Destroyer, this is for you.

BALANCE OF LIGHT AND DARK

BALANCE OF POWER adds two unique 15-mission campaigns (which include the cut-scenes lacking from the original game) that can be played in both single-player and multiplayer mode. Because the game doesn't have the TIE Defender nor the Missile Boat, the campaigns (thankfully) don't have the play-balance issues that created boring missions in the later TIE FIGHTER campaigns. The campaigns have interesting storylines, and starcraft are on more or less equal terms. The Rebellion campaign focuses on guerrilla warfare, with the finale of taking down the SSD Vengeance; while the Imperial campaign is a cat-and-mouse–style hunt for a Rebel shipyard. My one complaint is that a couple of the missions still seem optimized for multiplayer, as they sometimes demand that you be in two places at once. Though I was still able to get by them, I would gladly accept the help of other pilots in these particular missions (such as the weapon transfer for the Rebel campaign).

The game also adds some new melee, combat, and battle scenarios for multiplayer play; Direct3D support; and the B-Wing for Rebel players to fly. In addition to the B-Wing, there are a number of other capital-ship class vessels, such as the Super Star Destroyer and the new Modified Strike Cruiser (a significant portion in the Rebel campaign involves creating this new ship). Direct3D support didn't affect the game much; it seems to merely smooth out some textures and speed up the frame-rate during moments where it may have bogged down in the original game, such as when there are three Star Destroyers with full complements of TIE Advanced flying toward you.

STAR DESTROYED Direct3D support smoothes out textures when flying close, makes transparent explosions, and ups the frame-rate.

TRAINING IS COMPLETE

The main problems with this pack are its copy-protection, some lock-ups, and its tardiness. The game requires the original XvT disc, and will ask you to put in the BoP disc as well. Even with the full install, its behavior was puzzling, as the game seemed to randomly ask me to swap discs. In once instance, I didn't need the BoP disc at all. Another time, it asked me to swap discs right from the beginning, although I had done nothing different. I also noticed that there were quite a few lock-ups while playing a mission on my machine. The music would start to load, and the game would freeze, forcing me to hit Alt-F4 to exit the game.

If you were disappointed with the lack of single-player in the original release, BALANCE OF POWER will give you what you need. It finally makes XvT a compelling single-player experience, one with a feel more like TIE FIGHTER. The ultimate *Star Wars* game still has not been created, but with this expansion, XvT feels more complete. It's a pity the original release wasn't this good.

Price: $29.95
System Requirements: Original X-Wing vs. TIE Fighter, additional 50MB hard-drive space.
3D Support: Direct3D
Multiplayer Support: Modem, TCP/IP, LAN, Internet Gaming Zone (2–8 players); 1 CD per player.
Designer: Totally Games
Publisher: LucasArts
San Rafael, CA
(800) 985-8227
www.lucasarts.com

APPEAL: Anyone who bought X-WING VS. TIE FIGHTER and was disappointed with it, especially in regard to single-player.

PROS: Well-done single-player campaigns with decent plot and good play-balancing; a new ship for the Rebels; multiplayer enhancements.

CONS: Weird and annoying copy protection; Direct3D acceleration wasn't all it could be; much of this should have been in the original release.

CG RATED ★★★★

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College Try

DIFFICULTY LEVEL: EASY

HEROES OF THE GRIDIRON Is an Interesting, But Not Great, College Football Game

by Dennis McCauley

Like many a freshman whose debut is delayed, ABC SPORTS COLLEGE FOOTBALL: HEROES OF THE GRIDIRON was redshirted last year so that OT Sports could polish the engine, which also served as the engine behind MONDAY NIGHT FOOTBALL '98. This was a good move in terms of gameplay, but the company itself, as reported in my *CGW* column last month (issue #164, pg. 233), is in very dire straits.

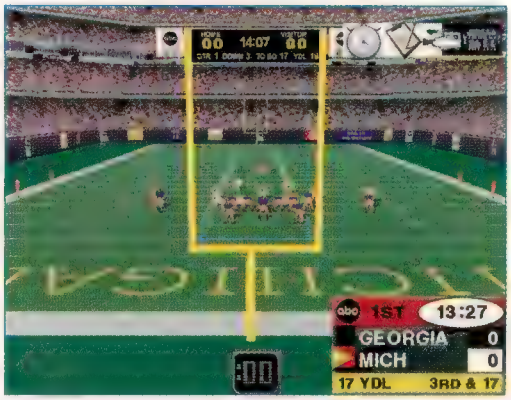
Like its NFL big brother, HEROES is a sophisticated football strategy sim with a glitzy T.V. sports theme. Unfortunately, HEROES' front-man is long-time veteran college football broadcaster Keith Jackson, who may be knowledgeable, but has a bland-as-oatmeal persona that lends no spice to the package. Color commentator Bob Griese and half-time studio host John Saunders also do little to pump up the game's excitement.

Despite the broadcast team's dry presentation, HEROES succeeds as a college football sim entirely on the merits of the finely-tuned MNF '98 engine. And therein lies the rub. Is HEROES a game in its own right, or an MNF add-on module, and one with a rather limited scope to boot?.

BE TRUE TO YOUR SCHOOL

Give OT Sports credit for an innovative approach. Taking a historical perspective to the college game, HEROES offers a selection of 32 top schools and stocks the teams with all-time rosters, rather than this year's players. Coach the Penn State Nittany Lions, for example, and you'll find Todd Blackledge handing off to John Cappelletti and tossing short outs to TE Kyle Brady. The Fighting Irish of Notre Dame might line up with a dream backfield featuring Paul Hornung at QB, flanked by Ricky Watters and Jerome Bettis at the running back spots.

Unfortunately, the rosters are noticeably overstaffed by players from the '70s, '80s, and '90s, and several stars play under assumed names. You won't find Fran Tarkenton on Georgia's roster, but someone named Dan Barkington is wearing his number. Ditto for USC, where B.J. Timpson wears Number 32, and stars at tailback for the Trojans. (Sheesh, these aliases can be murder!) Fortunately, HEROES' roster utilities allow you to edit player names where appropriate.



VARSITY COLORS The game's graphics are quite good throughout, even without 3D technology.

Gameplay in HEROES follows MNF '98s tried-and-true formula. Coaches use a simple, yet sophisticated, play-calling interface that allows on-the-fly editing of virtually any aspect of play design. Formations, assignments, pass routes, coverages, and blitzes can all be adjusted with a mere click of the mouse. Gamers can also create and edit coaching profiles that determine play selection during computer-simmed games, and that suggest a script for plays during coached games. Unfortunately, the playbook is remarkably similar to that of MNF '98, a fact which does little to establish the college game's value as a stand-alone sim.

While the game's AI is challenging, its real strength lies in head-to-head action over the Internet, which is a simple affair. There are plenty of other multiplay options, and the game includes an extra CD to pass along to a friend for head-to-head play. For the replay-minded, HEROES allows for league or tournament play, involving up to 32 teams. Games can be quick-simmed, although auto-played games result in unrealistically low scores, with frequent shutouts. While OT Sports is aware of this, it's unclear how the company's recent cutbacks may affect its ability to address such issues.

RED ZONE

There's room to wonder if this game isn't really just MNF '98 in a varsity sweater. With only 32 teams, I'd have felt better dispensing with the multimedia segments and plugging the classic teams into MNF '98 as a lower-priced add-on.

But overall, HEROES OF THE GRIDIRON is a quality product. The questions revolve around its value as a stand-alone product, and whether or not it packs genuine simulation value. If you're interested in playing for a national championship with this year's college rosters, you're in the wrong stadium. But if the appeal of classic gridiron matchups with a selection of dream teams puts the lime on your hash marks, HEROES could be for you.

APPEAL: College football fans.

PROS: Cool selection of former college stars; excellent play-calling and play-design interface; free Internet play; improved graphics; good computer AI; league and tournament play.

CONS: Stats skewed toward low-scoring games; limited selection of teams; bland multimedia elements.

CG RATED ★★★½

Price: $39.95
System Requirements: Pentium 100, Windows 95, 16MB RAM, 2x CD-ROM drive, SoundBlaster 16 or compatible sound card, 2MB Win 95-compliant video card. 14.4Kbps modem and ISP required for Internet play.
3D Support: None.
Multiplayer Support: Modem, LAN, or Internet (2 players); 1 CD per player.
Developer: OT Sports
Publisher: ABC Interactive
New York, NY
(212) 456-7747
www.abcinteractive.com

DIFFICULTY LEVEL: ADVANCED

Back on Track

NASCAR 2 Revs Up Again With GRAND NATIONAL SERIES EXPANSION PACK

By Gordon Goble

Over one year has passed since the release of Sierra's NASCAR RACING 2, arguably the finest hard-core auto racing sim to date, and that's a very long time in the computer gaming world. With NASCAR RACING 3 nearly a year away and virtually every other stock car game just that—a game—what's a racing realist to do?

Trust NASCAR developer Papyrus Design Group to furnish the answer with their latest hunk of racing software, the NASCAR GRAND NATIONAL SERIES EXPANSION PACK, which offers 12 new tracks for NASCAR 2. It also addresses NASCAR's more annoying quirks—stuff like unrecognized control devices, unsavable races, and bizarre pitting rituals.

What the expansion pack won't do is seat you in a distinctive Grand National Series car, a machine that in real life is less powerful and lighter than its NASCAR Cup counterpart. It also doesn't fix certain AI problems, most noticeably computer drivers who somehow still refuse to navigate around slowed or stopped cars, and it doesn't seem fully optimized for 3D, as it has somewhat slow frame rates.

Nevertheless, the 12 new tracks (10 real tracks, 2 fantasy tracks) and new seasons breathe life into this aging game. Here's a brief rundown on the new circuits:

Bull Run Raceway This imaginary 3.6-mile course is narrow with lots of lengthy straights and heavy-duty braking zones. If this isn't the toughest NASCAR road course, then it's close.

California Speedway Like the Michigan International Speedway, only tougher. Don't be surprised if California's scary turns reach out and rip your wheels out from under you if you don't show them appropriate respect.

NICE CURVES The *Red Rock International Raceway* is one of two fantasy tracks included in the expansion set.

Gateway International Speedway You'll have to drive turns three and four far differently than turns one and two on this skewed 1.25-mile oval.

Hickory Motor Speedway At just .363 mile, this is the shortest track in the NASCAR arsenal. If you can slow it down enough in the turns and have enough patience to let the traffic thin out off the start, Hickory is a fun place to drive. A personal favorite of mine.

Indianapolis Raceway Park Curiously easy, the .7-mile IRP oval features very little banking and a wall that pulls you toward it, and was a great way for Papyrus to get the "I" word into one of their products again.

Milwaukee Mile A real treat for anyone who's been driving a Papyrus CART car on this thing for the last few years, though Milwaukee is one of the most graphically ragged and "sparkly" courses there is.

Myrtle Beach Speedway A visually dark, 1.2-mile oval, where it's extremely tough to break free from the processional nature the pack must observe.

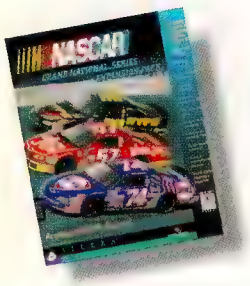
Nashville Speedway USA Nashville is one of the prettiest environments in the game. You'll quickly get used to the dips at the end of each straight and appreciate the track's accommodating nature. Experienced drivers may find their car hooks up a bit too easily, as seems to be the case with several of the new circuits.

Nazareth Speedway Nazareth is skinny and oddly-shaped—almost a tri-oval but with more turns. With its unique structure and ample scenery, it comes across like a slice of Watkins Glen and is very tough to drive.

Red Rock International Raceway The other fantasy course, Red Rock is a big, wide road course set amidst seaside mountains. Huge looping elevation changes and unrealistically high speeds make this a bit confusing at first, but there are lots of racing lines and spacious turns.

South Boston Speedway There's plenty of room down low to help propel you past highside traffic on this ultrashort (.4 mile), but wide, oval. Run at dusk, the ambient lighting is gorgeous.

Texas Motor Speedway A 1.5-mile oval ice rink for the first few laps, TMS becomes a different beast once your tires warm up. Varied banking and tri-oval characteristics keep things difficult, but this is one of the most rewarding tracks.



Price: $49.95
System Requirements: 486/66, 16MB RAM, 60MB hard-drive space, sound card with DAC, mouse, 2x CD-ROM, VGA graphics.
3D Support: Rendition
Multiplayer Support: Modem (2 players), LAN (2–8 players); 1 CD per player.
Designer: Papyrus Design Group
Publisher: Sierra On-Line Bellevue, WA (206) 649-9800
www.sierra.com

APPEAL: NASCAR 2 fans looking for more hard-core racing action.

PROS: New tracks are mostly great and breathe new life into NASCAR 2; fixes problems with original game.

CONS: Still some AI problems; frame rate not great.

CG RATED ★★★½

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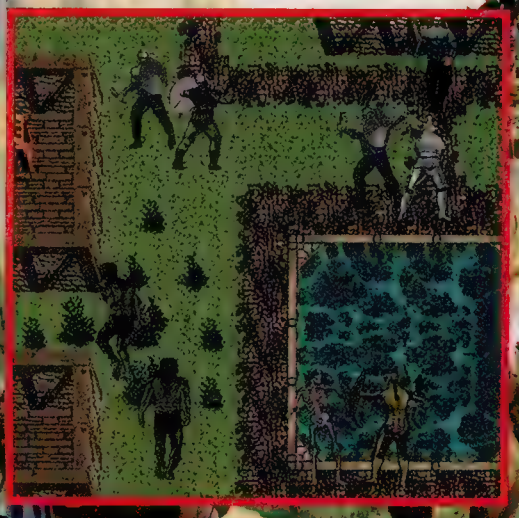

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DIFFICULTY LEVEL: EASY

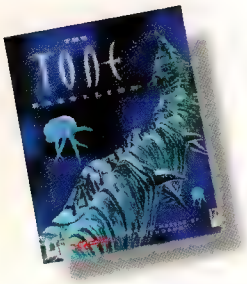
Weird & Wonderful

The Logic Factory Moves Beyond ASCENDANCY

by Martin Croft

THE TONE REBELLION is one of the weirdest things I've seen in 15 years, a mix of sheer genius and curious lapses—yet I can't stop playing it. How best to describe it? Imagine if you can, a world designed by the Catalan architect Gaudi (famous for his buildings that looked like malignant organic growths), with input from horror-meister H.P. Lovecraft and science-fiction writer H.G. Wells after a bad bit of curry, and you begin to get the idea.

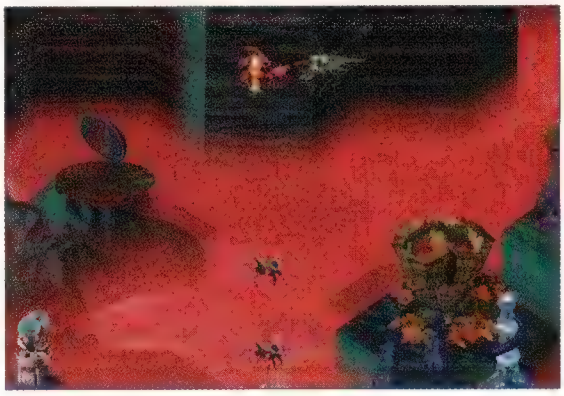
You control odd jellyfishlike creatures (Floaters) that live on fragments of a once-mighty planet, and who are trying to defeat the monstrous Evil Leviathan by harnessing the power of a substance called the Tone Flow. The game's wild array of colors features stunning lilacs, purples, and reds, and the game's organic shapes—especially the evil ones—look like something from a medical textbook about melanoma. Meanwhile, TONE's background music sounds like Gregorian chants meet Acid House...you get the picture.



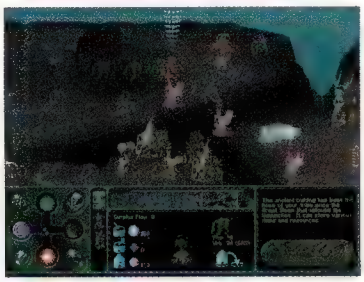
Price: $49.95
System Requirements: Pentium 90, Windows 95, 16MB RAM, 30MB hard-drive space, 4x CD-ROM; supports Direct Draw video and Direct Sound audio.
3D Support: None.
Multiplayer Support: IPX network (2–4 players, cooperative play); 1 CD per player.
Designer: The Logic Factory
Publisher: Virgin Interactive Entertainment
Irvine, CA
(800) 874-4607
www.vie.com

SURREALISM SPRINGS SIMPLICITY

Underneath all that, the structure of the game is pretty straightforward, simplistic even. It's a real-time strategy game in which you control one of four tribes of Floaters, each with its own peculiar powers. Using them, you can harvest natural resources (the Tone pools), build strange sci-fi Victorian mad inventor buildings that process the Tone into useful stuff, and make different sorts of warriors. Alternately, you may simply channel energy to other areas, such as exploring brave new worlds, killing monsters, and finding artifacts of power.



I HAVE TONE The Brotherhood of the Tentacle attacks the Core, where the background is, appropriately, blood-red.



JELL-O TO GO Here, Floaters stockpile Tone before invading the next Leviathan-held island.

Ho, hum, I hear you say. We've seen it all before—it's like any one of 50 real-time games we've already played, with maybe a little more sci-fi bent. Except that it isn't so easy to pigeonhole this game, because you spend much of your time in TONE REBELLION mind-boggled by the latest hideous creature you have to overcome. I can't remember the last time I just stared at my monitor time and again, saying, "What is that?"

Each of the floating islands that make up the game world—how many islands in play is left up to you—is in effect a different level. So, at times there's a very lively arcade feel to the game, although with strong enough strategy elements to keep TONE from becoming a simple shoot 'em up.

Each time you finish a level, you pick up artifacts that give you the power to construct new buildings. At some point, you also have to get all the artifacts you've collected to the Leviathan's base and then use them to kill it.

TONE REBELLION isn't perfect by any means. Sometimes the game is too surreal for its own good. And while the manual has lots of stats for monsters, it doesn't give you much info, and it's printed in a barely readable gothic typeface. The best way to get a handle on TONE is to plunge right in. If you're anything like me, you won't be able to stop.

APPEAL: Anyone wanting a completely different strategy game.

PROS: Unique and surreal; absolutely stunning graphics; cooperative multiplay.

CONS: Sometimes too surreal; overly minimalist documentation; long-term replay is questionable.

CG RATED ★★★★

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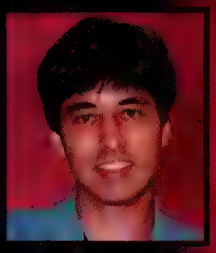

Mike Kulas
President of Volition and Designer of the award winning Descent and Descent II

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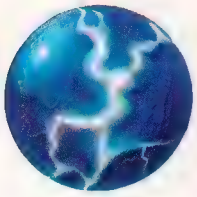

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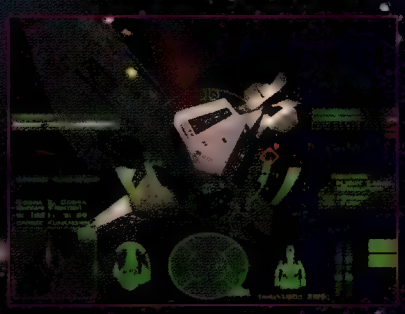

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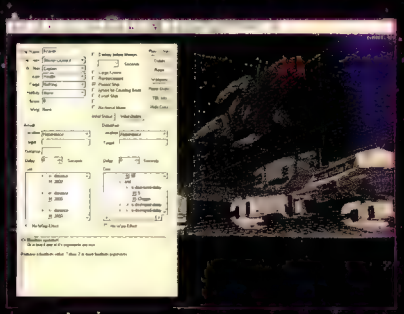

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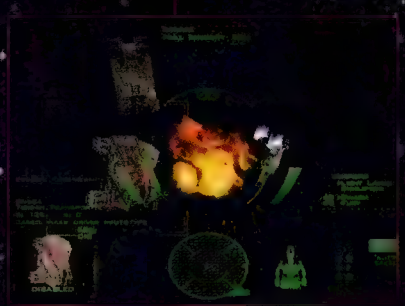

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DIFFICULTY LEVEL: INTERMEDIATE

Lords of Outpost

This LORDS OF THE REALM Sequel Is Patchwork Magic at Its Worst

by Tim Carter

To call Sierra's LORDS OF MAGIC an unfinished game is like saying that OUTPOST had a few documentation problems. LORDS OF MAGIC—the logical successor to, if not truly a sequel of, LORDS OF THE REALM II—is certainly ambitious. It puts you into a Tolkienesque world to defeat the forces of evil, unite the land, and clean out sundry dungeons and mysterious keeps along the way. This is not a particularly original premise for a game, but it has been done successfully before.

LAY YOUR CARDS ON THE TABLE There are plenty of trading options, but none for real diplomacy.

UNFINISHED BUSINESS

The sad thing is, programming and design flaws that will undoubtedly frustrate many aspiring overlords totally negate this game's potential. In fact, the initial release of LORDS OF MAGIC is essentially a beta. The time required to load different screens and to process other players' moves is a major test of patience, while the game itself crashed so frequently that I eventually resorted to backing up after every move. Moreover, LORDS has a nasty habit of confusing its bookkeeping, so that new units you buy are as likely to end up in the army of your enemy as in your own.

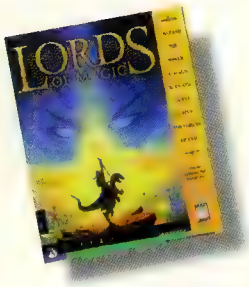
Also, characters (including you) in LORDS OF MAGIC are much weaker than they ought to be. While it makes sense for you to be weak at the start of the game, characters on both sides remain ridiculously fragile throughout the contest. Many times another religion launched a sneak attack on my weakly held capital, while my main army was off somewhere else. Knowing that I couldn't win, I ordered my archers to direct their fire against the opposing general. Most of the time they succeeded in taking him out before they were overcome.

When the strategic game resumed, my capital had fallen, but so had the leader of the opposition. This removed the other player from the game entirely, and made it very easy for me to retake my home city and then go on to take over an entire country that otherwise would have been very difficult to conquer. Even the ultimate bad guy, Balkoth, the Lord of Death, can fall prey to this cheap strategy. Although his army is quite impressive, Balkoth is vulnerable to long-range magic fire—even when it comes from *first-level mages*. Thus, one or two suicide missions by mercenary units is all it takes to destroy Balkoth. This is a most depressing way to finish an hours-long game; it is reminiscent of a weak ending from a poorly-designed RPG.

BURIED TREASURES?

What's so disappointing about LORDS OF MAGIC is that some good ideas are hidden underneath the many flaws. The combination of turn-based strategy with real-time tactical combat (a legacy from LORDS OF THE REALM II) is still pretty unique in a sea of real-time strategy clones. In LORDS OF MAGIC, however, the flow of combat tends to get repetitive after a while.

CLIPPED WINGS In this tactical combat, the worshippers of Air try to fly away from the mixed elf-lizardman army, but the quick-firing Elven archers have their number.



Price: $49.95
System Requirements: P100, Windows 95, 16MB RAM, 135MB hard-drive space, SVGA Graphics, 4x CD-ROM; supports Win 95-compatible sound cards.
3D Support: None.
Multiplayer Support: IPX, LAN (4 players; requires 32-bit low-latency connection); 1 CD per player.
Designer: Impressions
Publisher: Sierra On-Line, Inc.
Bellevue, WA
(800) 757-7707
www.sierra.com

Band-Aids Can't Cure Everything

LORDS OF MAGIC is another in the seemingly infinite series of recent Sierra games that requires a patch to merely play the game. Version 1.2 allows play to move along considerably faster than the original, and now the game only crashes about once every 10 turns or so.

One of the least pleasant aspects of the patch is that it makes the game's design flaws all the more noticeable. For instance, to become the recognized lord of your people, you must free your religion's great temple from the forces of darkness. If you manage to free another religion's temple later in the game, the people of that religion will swear fealty to you as well—provided you aren't presently at war with them.

As all of the other temples are weakly held, you can double and then triple the size of your empire simply by riding into the opposition's region, taking the temple in a single, easily won battle, and then moving on. All of the effort put into the various races and the fantasy background doesn't mean much when you can win in LORDS OF MAGIC by using such a simplistic strategy.

In the final analysis, the patch helps—maybe raising the game to a 2- or 2.5-star rating—and the dozens of fixes it contains are far too many to list here. As of press time, there were yet more patches on the way. *Caveat Emptor.*

The main problem is that the terrain where the battles take place—particularly in dungeons—is all too often the same old thing. Part of the reason that the designers place the battles in closed confines is to help the AI, which fell apart in the wide-open fields of LORDS OF THE REALM II (though it fared better in similarly closed-in castles). Even so, the various strengths and weaknesses of each racial type could offer many tactical challenges during the real-time battles, if the game would stay stable long enough to let you get a rhythm for combat.

ORDERED ESCORT Even viewed from faraway zoom, the crisp graphics of LORDS OF MAGIC make it easy to tell your formations from that of the enemy.

As one might expect, your heroes and units accumulate experience over time, and the payoffs from experience are immediate and noticeable. This fostered a sense of loyalty to certain favorite units, which I nurtured and protected in order to build them up from rookies to impressive veteran formations.

Given that the name of the game includes the word magic, I expected a little more emphasis on spell casting. Magic is present, and researching new spells and then using them properly is important to your success, but it's not nearly as satisfying as in MASTER OF MAGIC.

LORDS OF MAGIC also comes with a number of options that aren't really that useful. The entire thieving system, while somewhat innovative, didn't strike me as all that relevant to winning or losing the game. Likewise, the diplomacy interface seems very limited. You can conduct very complicated trades, but you can't perform even the most rudimentary diplomacy. This tends to undermine peaceful players and encourage a strategy of conquest. All of which is okay, but I can't help thinking that there could have been so much more to the game if the "good" players could gang up on Balkoth.

BLACK MAGIC

There are a lot of reasons to dislike LORDS OF MAGIC: several bugs, interface problems, pitifully weak bad guys, and multiple crashes. Aside from these, the numerous design glitches should, by all rights, have killed this game the minute it was released.

Despite all this, the basic game system is easy to learn, and the gameplay has some fun and even challenging moments. You have to wonder how Sierra could have so fouled up a winning game system (especially since LORDS OF THE REALM II sold about 300,000 units). Fantasy aficionados are strongly advised to get WARLORDS III or HEROES OF MIGHT AND MAGIC II rather than LORDS OF MAGIC. If you are a grizzled Tolkienian veteran in need of a Elven fix, don't say we didn't warn you—and be sure to download the latest patch (read the sidebar first). I hope Sierra will have the sense to finish the next LORDS sequel (assuming there will be one after this debacle), instead of shipping it to meet an artificial sales date.

APPEAL: Those who must have all things related to LORDS OF THE REALM.

PROS: Proven LORDS OF THE REALM game system; easy to learn; variety of strengths and weaknesses for each fantasy race.

CONS: Almost everything else; the most unfinished Sierra product since OUTPOST.

CG RATED ★

DIFFICULTY LEVEL: INTERMEDIATE

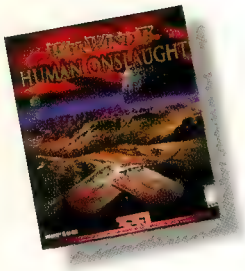
Second Helpings

SSI Continues Its WarWind Franchise With a Competent Sequel

by Gavin Hachiya Wasserman

The problem with developing strategy sequels is that companies have to reconcile gamers' impulses for "more of the same" with the inevitable ennui that accrues with cycle after cycle of point, click, build, develop, and destroy. SSI did a good job confronting this problem a year ago when it released the first WarWind into a real-time marketplace defined by Command & Conquer and WarCraft II. Surprisingly, WarWind had a lot to offer on top of the standard "harvest, build, destroy" model: four indigenous races with unique abilities; four original campaigns with different themes of empire, revolution, and spiritual redemption; and an imaginative melding of fantasy and sci-fi. As a sequel, WarWind II rests somewhat on those laurels. While the four-way contest has been altered by the addition of two human contingents, most of the game mechanics are the same.

BACK TO YAVAUN WarWind II returns us to that war-torn world, adding a human element but keeping the familiar feel of the original.



Price: $39.99
System Requirements: Pentium 90, Windows 95, 16MB RAM, 33MB hard-drive space, 4x CD-ROM, 2MB SVGA card, Native Windows 95 sound card.
3D Support: None.
Multiplayer Support: Modem (2 players), LAN, Internet (2–4 players); 1 CD per two players.
Developer: DreamForge
Publisher: SSI Online Sunnyvale, CA (800) 601-7529
www.ssionline.com

The cast this time is a little different. There are four races, but the two human ones—Descendants and Marines—are new. The Tha'Roon have managed to rein in the Obblinox to form the Overlord contingent, while the Shama'li have joined with the plantlike Eaggra to form the rebellious S.U.N faction. Each race battles for its doctrine's supremacy, whether that doctrine is one of domination, peace, or a one-way ticket back to Earth.

ALL THAT YOU CAN BE

As in WarWind, you recruit units by hiring them from existing townspeople. Those townspeople become the basic faction unit from which all other units derive, thanks to extended training, class changes, and upgrades at various structures. The townspeople must be from the same races as your faction. Occasionally, more advanced units of other races may be recruited, but their skill levels are fixed and they may neither train nor receive upgrades from your faction. Because advanced units are produced from existing units, the supply of troops is finite. A faction may have enough resources to hire a dozen new recruits, but if there are no townspeople on the map, then the faction is out of luck. In multiplayer games, this encourages early hunting of potential enemy recruits to remove an enemy's source of labor and firepower.

Each unit is trained or upgraded separately. Not all recruits are created equal either: Some have more "potential" then others. Once advanced training is available, units may be upgraded and trained into one of several breeds of especially fearsome warriors or powerful mages.

RADIO FOR BACKUP!

From the most advanced warrior to the most humble worker, units have different reaction times, weapon-types, movement speeds, and rates of fire. Weapon-types have their individual benefits and limitations. Some weapons damage an area of effect and are especially good for mass combats or attacking structures. Others are more precise and prevent collateral damage to structures or units. Still other weapons use magic or psionics to bypass armor and strike at the mind of an enemy. The benefits of each weapon are incentives enough to diversify, but it is each weapon's limitation that mandates combination and experimentation.

While advanced troops such as the Marine legionnaire and the Tha'roon jump-troop wield powerful lasers that wreak havoc on ground units, their

BOOM! Air units such as the Marine Viper can head enemies off at the pass—and then blow up the pass.

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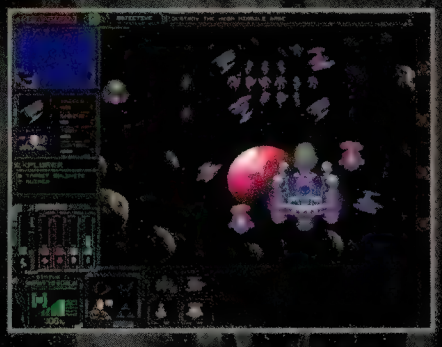

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KISS MY ASH Tha'Roon Exterminators don't have much range with their flamethrowers, but when a S.U.N. Ranger gets lured in close, it's toast.

weapons cannot be used against flying units. Although frustrating at first, it made sense in terms of game balance, otherwise those units would quickly dominate the game. It's decidedly humbling to run your killer-cyborg away from an unarmored helicopter that a grunt with a submachine gun could pop like a water balloon. As in WarWind, the combat imperative is toward combined-arms tactics.

ROLL 'EM OUT

Premium units take time to nurture. Luckily, up to eight units can be held in the "Hall of Heroes." You can then give them immediate assignments in the next scenario or save them for use later down the line. On this screen you can even rename the unit from its bland unit designation to something much more sentimental. WarWind II wants you to love your troops like the little neo-RPG heroes they are.

The powerful vehicles don't qualify for the Hall of Heroes, but they do play a huge role in WarWind II. They serve as unit transports and provide protection for the units they carry. Finally, a disabled vehicle can be salvaged and repaired by a unit of the same faction who possesses the Repair skill.

Oddly, the Descendant robot worker and the Overlord chaingun mech aren't considered vehicles and *can* be placed in the Hall of Heroes like other units. They can even be healed like their fleshy counterparts. Of WarWind II's anomalies, by far the most amusing is that animal units, such as the dog or elephantine bonca, can be made to pilot vehicles. Tactically, it's useful, since animals are generally weak in melee and their uncanny mammalian piloting skills free up more effective troops for the fray. I suppose it's less cruel than using Bonca to draw enemy fire or clear mine fields.

Less amusing were bugs in saving and mission goals. In the Descendant campaign, my aggressive troops killed a powerful enemy Hero on sight. I later learned that to truly complete the scenario, I was supposed to talk to this Hero (while she shot at my troops), then, politely, kill her. More annoying still was that at times I lost troops while I saved at the Hall of Heroes screen.

The default AI isn't nearly challenging enough, as it doesn't take full advantage of its troops' capabilities. Only on higher difficulty settings does the AI become adequate. But the variation in troops and structures promises a fantastic multiplayer game. In the campaigns, the cinematics between scenarios are decent, but don't expect any grand theater at the game's end. However, because campaign paths diverge based on quest choices, campaigns may be repeated several times. If that's not enough, WarWind II also includes a scenario editor for increased replayability. As a sequel, some might consider the look and gameplay too similar to the original. But on its own, WarWind II still delivers a solid, engrossing experience. While it doesn't have that special quality to make it a classic, it's a good and distinguished addition to the real-time library.

APPEAL: Fans of the first game, or those looking for a pseudofantasy real-time game in this year's hard-core sci-fi crowd.

PROS: Four different sides; cool WarWind holdovers like Hero units and various neutral critters; good sense of combined arms.

CONS: Some bugs in saving and scenario design; not enough innovation over the original game.

CG RATED ★★★★

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Ancient Waterloo

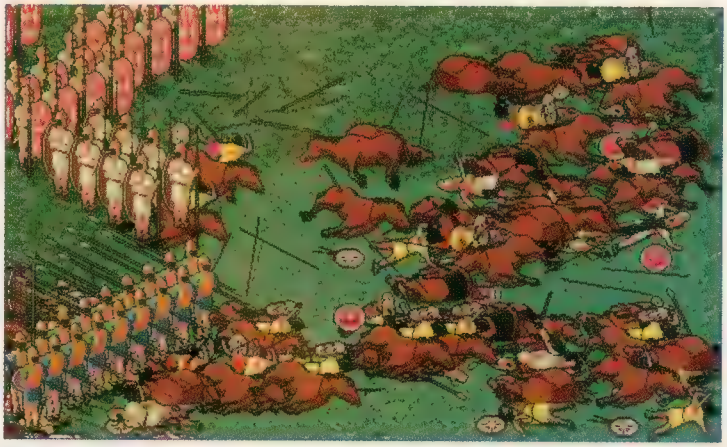
DIFFICULTY LEVEL: INTERMEDIATE

This GREAT BATTLE Gets Routed by a Slow, Buggy Engine

by Ron Talbot

THE GREAT BATTLES OF HANNIBAL, like its predecessor, THE GREAT BATTLES OF ALEXANDER, is a pretty faithful recreation of the turn-based paper wargame—right down to the hexgrid. HANNIBAL is a well-researched simulation of the Second Punic War, in which you do your best to outwit, outmaneuver, and outfight the Roman military system—a task at which even Hannibal ultimately failed.

To its credit, HANNIBAL tries to be much more than a simplistic crash-and-bash affair. As in ALEX, combat units are rated for movement, melee, missile, armament type, and even—unique among ancient-warfare simulations—troop quality.



GLUE FACTORY Animals are definitely harmed in the making of this historical epic, unlike many overly sanitized games.

SON OF ALEX

Based on his historical performance, a leader may issue orders to his units each turn within his command radius; he may also attempt to rally routed units. Since the only way a unit may move or attack is to receive an order, leadership is all-important. The Carthaginians have the best leaders, which makes Hannibal's forces more interesting to play.

The combat system is sophisticated, taking into account such subtleties as shock superiority of various unit types. Rather than fighting to the last man, the units realistically are routed when they fall too low in troop quality. In a departure from ALEX, units may now move and fire, making fast missile units much more effective. A new *undo move* command reduces the frustration caused by an errant mouse click. The Romans may employ Manipular Line Extension, a special maneuver that takes the Legions out of a checkerboard pattern into a solid line in a single command. These features are accessed through buttons on a menu bar.

The maps are improved over those of ALEX, and the historical detail of each unit's armor and equipment is a delight to examine at full zoom. Unfortunately, the overall effect looks dated and very flat. HANNIBAL also runs faster then ALEX, but movement and combat animation is agonizingly slow on anything short of a Pentium II system.

Some automated features of HANNIBAL may irritate more than they help you. For example, whenever your missile units run out of ammo, they will attempt to resupply within the command radius of their leader. This uses the unit's entire turn to rearm, allowing no movement or combat. Both the Carthaginians and the Romans (to a lesser extent) have strong melee units that also have missile capability. Problem is, units will often freeze in suicidal positions to calmly pass out the ammo while half the enemy army slams into their flank.

CANNAE REVISITED?

Among the Great Generals of history, Hannibal is nowhere near as familiar to the average gamer as Napoleon, Lee, or Alexander, and both Erudite and I-Magic deserve credit for bringing his epic battles to the computer. The game system does a good job of showing the differences between the flexible Roman Legion and the Carthaginian Phalanx. You must master the combined arms tactics pioneered by Hannibal if you are to conquer Rome.

However, as an overall experience, HANNIBAL does the great leader a disservice, because so many aspects of the game simply aren't finished. The unimaginative campaign game does little more then string battles together in historical order. The slow game engine takes much of the fun from multiplay, and the number of crashes and lockups are unforgivable in the second iteration of a series. Period enthusiasts will find historical insight and some challenges, but be warned that in many ways, HANNIBAL marks a step back from ALEX. I hope that Erudite and I-Magic will fix these problems by the time JULIUS CAESAR ships.

APPEAL: For ancient warfare fans who've already played ALEXANDER.

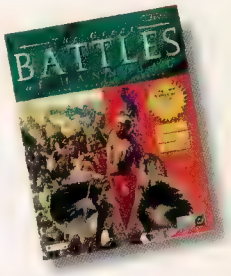
PROS: Detailed, historical game system; elephants vs. Roman legions; nice autosave feature; minor improvements over ALEX.

CONS: Campaign is too linear; slow game engine; tinny music; crashes and lockups; doesn't seem finished.

CG RATED ★★

CGW ON-LINE

For more about Ancient-era strategy games, check out our extensive coverage at **www.computergaming.com**



Price: $49.99
System Requirements: Pentium 90 (P133 or better strongly recommended), Windows 95, 16MB RAM, 130MB hard-drive space, SVGA graphics, 2x CD-ROM (8x or better strongly recommended), mouse; supports Win 95-compatible sound cards.
3D Support: None.
Multiplayer Support: Modem, IPX, LAN (2-6 players); 1 CD per player.
Designer: Erudite Software
Original Boardgame Design: Mark Herman and Richard Berg
Publisher: Interactive Magic (800) 789-1534
www.imagicgames.com

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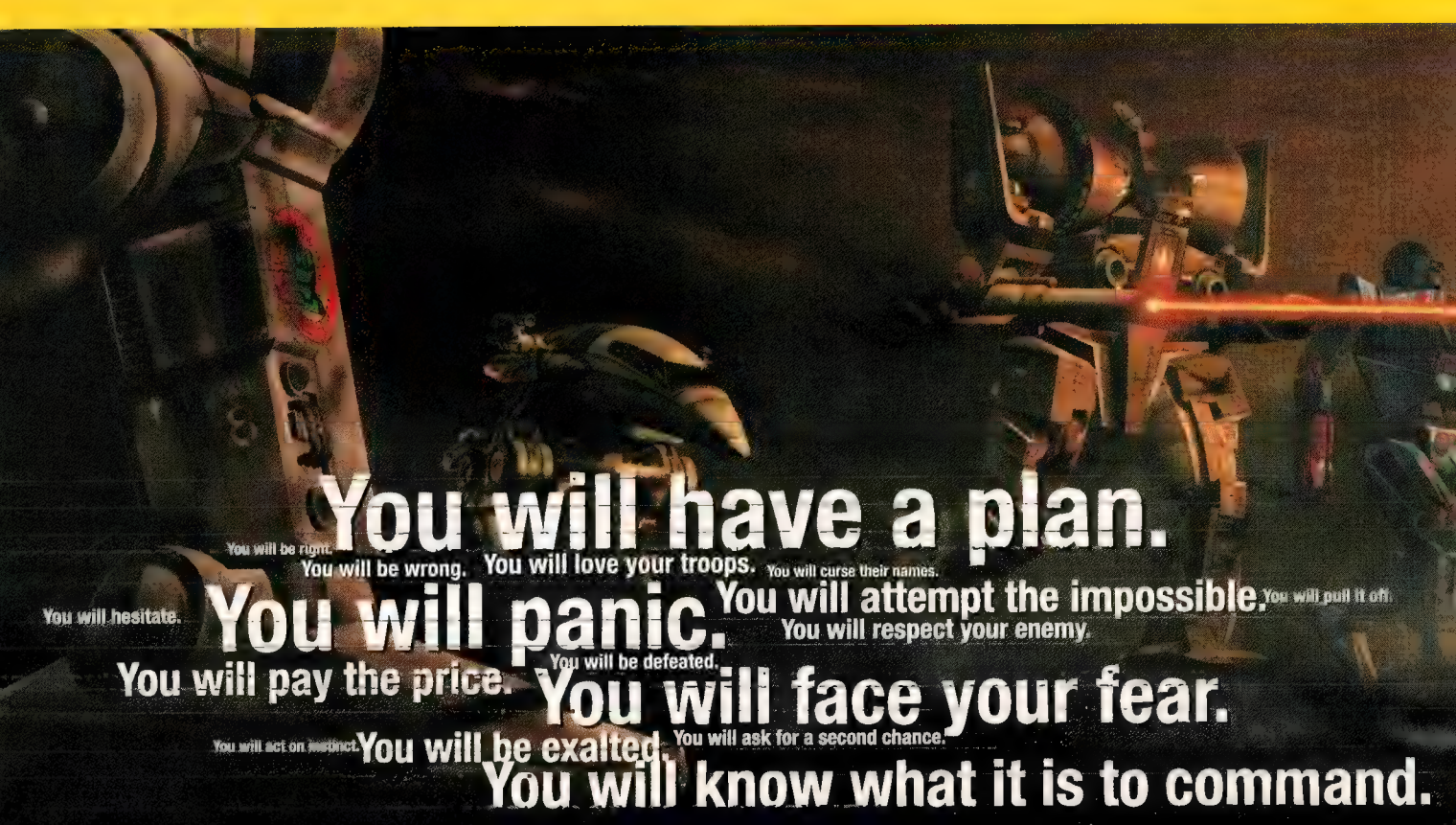

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You will be wrong.
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You will hesitate.
You will panic.
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You will pull it off.
You will respect your enemy.
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RATING PENDING
RP
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DIFFICULTY LEVEL: INTERMEDIATE

Long in the Tooth

The Grand Old Cat Is Still Realistic, but Very DOS-dated

by Jim Cobb

We see so many sequels because, quite simply, a good thing is hard to leave behind. In this case, Gary Grigsby and SSI have produced accurate and enjoyable simulations of WWII armor action in STEEL PANTHERS and of post-1945 actions in STEEL PANTHERS II. The question is whether the latest entry in the series, STEEL PANTHERS III: BRIGADE COMMAND, really is an enhancement, or just one last kick at a cash cow?

THE DUSTBIN OF HISTORY STEEL PANTHERS III has some nice touches (such as this informational screen), but they don't quite make up for the creaky game engine.

SEVEN DECADES OF WARFARE

STEEL III tries hard to provide everything that made the first two games popular. The interface will be easily assimilated by STEEL veterans (though it's still not as elegant as PANZER GENERAL's). STEEL III is certainly comprehensive, as it covers a wide range of conflicts, from 1939 to the near future. Every nation with serious armed forces is represented with an adequate table of organization and equipment, and you can choose from more than 40 different scenarios and six campaigns covering all theaters of war. The campaigns offer chances for getting more troops, upgrading equipment, and improving troop and leader quality—provided you do well in the linked battles. If there aren't enough battles to suit your fancy, you can create your own with STEEL III's editor.

You've seen these mechanics before: turn-based, with opportunity fire possible in the opponent's turn. As you would expect from a modern tactical game, facing and line-of-sight are crucial to effective fire. Fog-of-War is used well, and it often causes blazing firefights when fire from one unit trips an ambush and hidden enemy units start a chain reaction brawl, then draws in other friendly units.

As in other Grigsby games, units are extensively modeled for weapon systems (including ammunition amounts and types) and defensive capabilities, with troop quality and morale also playing large roles. Combat affects units' abilities when they are suppressed, pinned, or routed, and leaders may attempt to ameliorate negative results through rallies. If you call in artillery or air support, it won't arrive instantly, and may result in "friendly fire" losses, which are dealt with more realistically than in previous STEEL games. You attain victory by (typically) occupying objectives, achieving good kill ratios, or both.

BUT IS IT DIFFERENT?

STEEL III differs from its predecessors primarily in two areas: scale and command control. A hex is 200 yards, not 50, and units represent infantry companies (30–50 men) and vehicle platoons (2–4 vehicles) instead of platoons (10–25 men) and individual vehicles. Where one lucky shot could take out a Tiger in an earlier STEEL game, a Tiger section in STEEL III requires prolonged pummeling. Infantry is now tougher. Armor takes the role of a sharp instrument for slashing advances, not a blunt instrument. Thus, to do well in STEEL III, you must employ real combined arms tactics—with a particular reliance on artillery preparation and air reconnaissance.

Command control-points are used to change a unit's stance (defend/advance) or objective, or to request indirect fire. Each leader has a number of points equivalent to his rank. Points can be gained each turn if the leader is in contact with his superior headquarters. Dependence on chains of command force you to refrain from break-neck charges.

There is certainly enough going on in STEEL III to make it more than an add-on. Still, one has to wonder why SSI is essentially using a 1995 DOS engine for the third installment to one of its flagship series. Die-hard aficionados of modern warfare will find plenty of realism here. Others should be warned that STEEL III is not anywhere near the definitive wargaming statements made by STEEL I or II.

Price: $44.99
System Requirements: 486/66, DOS 6.22, 16MB RAM, 16MB hard-drive space, 1MB SVGA graphics card, mouse; supports Sound Blaster–compatible sound cards.
3D Support: None.
Multiplayer Support: Email (2 players).
Designers: Gary Grigsby, Keith Brors, and the SSI Special Projects Group
Publisher: SSI (a Mindscape Company) Sunnyvale, CA (800) 601-7529
www.ssionline.com

APPEAL: Primarily for hard-core 20th-century wargame fans.

PROS: Solid tactical model; new scale; command control.

CONS: Aging DOS engine and graphics.

CG RATED ★★★

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...exceedingly fun to play."

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GAMESPOT 9.3 Rating
#1 Ranked Strategy Game

"...historical and fun...expert battlefield feel...excellent sound and graphics..."
CGW ★★★★½

"...melds real-time action, strategic depth, and historical veracity into one terrific experience."
PC GAMER
Editor's Choice

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DIFFICULTY LEVEL: EASY

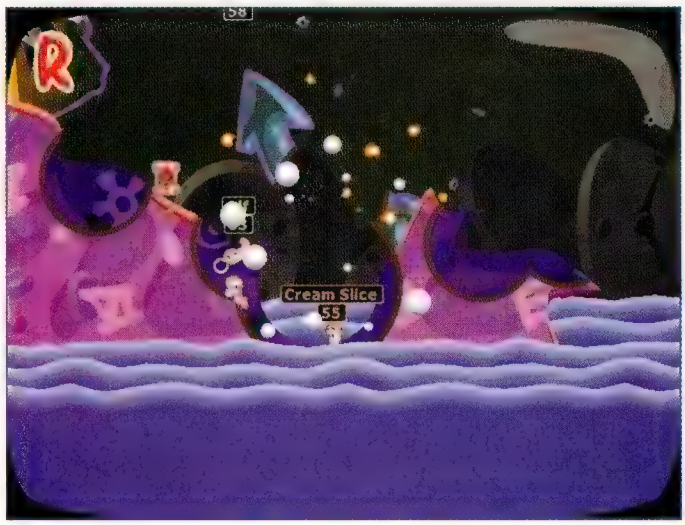
Set Phasers on Cute

Don't Expect Too Much From This Simple Farce of Gun-Toting Action

by Martin E. Cirulis

ARTILLERY goes back to the ancient days of computer gaming, when ASCII characters doubled as graphics and programs were stored on audio tape. Basically, each player had a cannon to fire at opponents. After inputting the angle and power of your barrel, you would see the little asterisk that was your shell arc across the screen and either blow up your opponent's gun or chew up the landscape. It wasn't DONKEY KONG, but it was fast, easy to program, and one of the few multiplayer games available.

As times and technology have changed, ROGUE has become DIABLO, SPACEWAR has evolved into WING COMMANDER, and ARTILLERY has become...well...WORMS! More precisely, the new and improved WORMS 2, brought to you by the efforts of MicroProse and Team 17.



SEA YA! You'll have a wide range of weapons (from bazookas to air strikes to baseball bats) at your disposal to sink your enemy's worms.

Price: $36
System Requirements: Pentium 75, Windows 95, 16MB RAM, 2x CD-ROM drive, 1MB video card; supports SoundBlaster-compatible sound cards.
3D Support: None.
Multiplayer Support: Modem (2 players), LAN, Internet (2–8 players), Hotseat (2–18 players); 1 CD per computer.
Designer: Team 17
Publisher: MicroProse
Alameda, CA
(510) 522-1164
www.microprose.com

MEALWORM MAYHEM

In case you missed this game's wacky predecessor, WORMS 2 is a cross between the mechanics of ARTILLERY and the humor of LEMMINGS. Instead of cold, heartless howitzers, you command a group of psychopathic worms with access to a truly bizarre and terrifying arsenal of weapons. In basic game terms, this means that your artillery piece now looks and sounds a whole lot cuter and can move around before shooting.

While some of the weapon effects are funky and original (just try to restrain a snort as you lob a holy hand grenade or send a killer sheep to do its deadly business), there is no escaping the fact this is an ancient computer game tweaked to the nth degree. A nice twist, though, is that instead of commanding just a single cannon, you run an entire team of weapon-toting worms. The actual physics of lobbing and dropping the various weapons is quite well done. However, some players, especially fans of the other ARTILLERY descendent, SCORCHED EARTH, will be annoyed by the fact that terrain is immune to the effects of gravity. Blow up a cliff's foundation and you'll still see portions of it suspended in midair.

WORMS 2 does a good job of warding off repetition by offering dozens of new weapons and enough nutty terrain types. It also contains a set of user tools for fiddling with almost every aspect of the game. Using the crude-looking, but effective, editor, you can adjust every weapon's characteristics and availability. The same goes for the actual rules of any given battle. Even the sounds your worms make as they gloat or moan after an attack can be preselected.

AT WHAT PRICE...AMUSEMENT?

Unfortunately, for all the style and comedy to be found in this game, it is still pretty basic. Despite some excellent animation in the intro, there is a lack of polish in the graphics and interface that may leave some players disappointed. If you want to get your money's worth, you had better love ARTILLERY and twisted humor an awful lot. Otherwise, this one could get awfully thin awfully fast. On the other hand, in a world where computer games get more complex and pretentious every day, WORMS 2 offers a fun trip back to a time when gaming could be enjoyed over a coffee break.

▶APPEAL: Gamers looking for fast, simple action and twisted humor.

▶PROS: Very funny game that takes ARTILLERY as far as it can go; tons of gameplay options at the user's fingertips.

▶CONS: Game's limited, basic mechanics could quickly lead to boredom; terrain is immune to gravity; graphics and interface lack polish.

CG RATED ★★★★

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comp.sys.ibm.pc.games.strategic

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—Tom Chick
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—Patrick Scott
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"**Seven Kingdoms** is simply the best real-time game on the market to date."

—The Cheaters Guild

"**Seven Kingdoms** delivers on the promises made by **Age of Empires**."

—Gamespot

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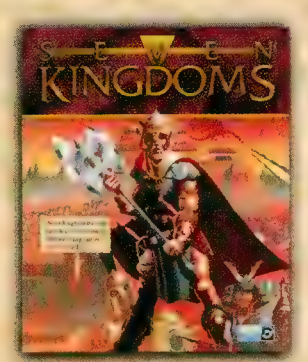
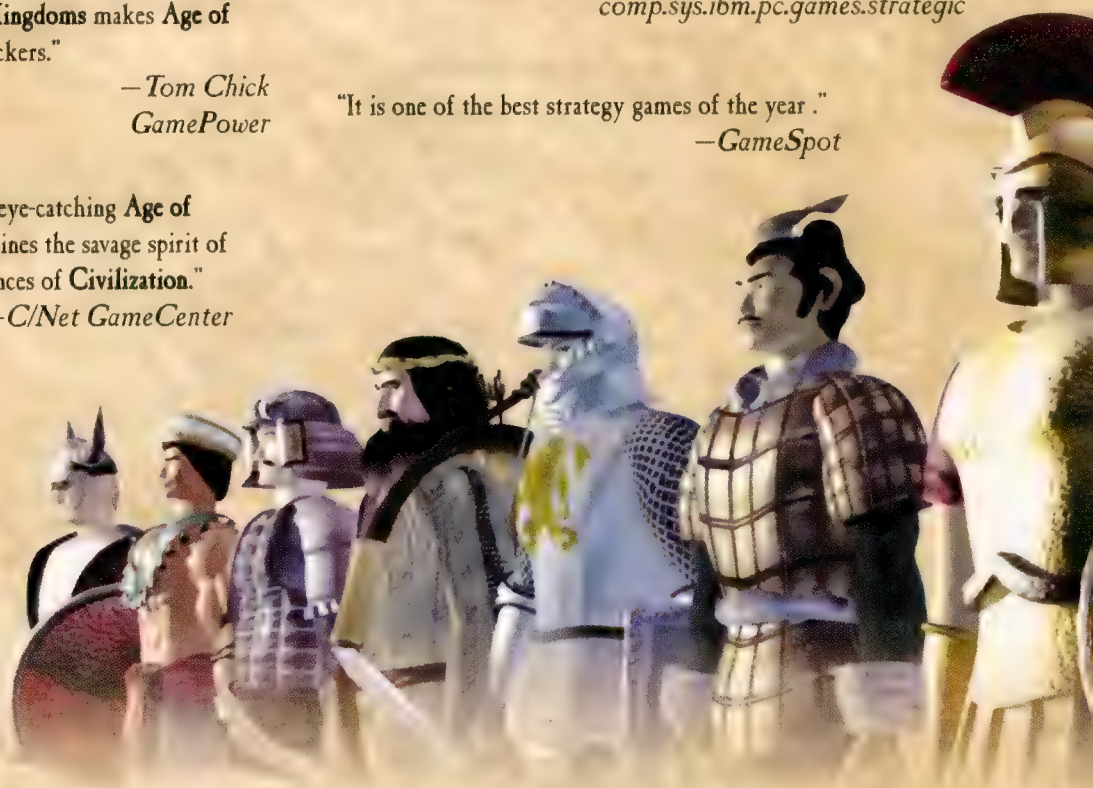
—Michelle Topham
comp.sys.ibm.pc.games.strategic

"It is one of the best strategy games of the year ."

—GameSpot





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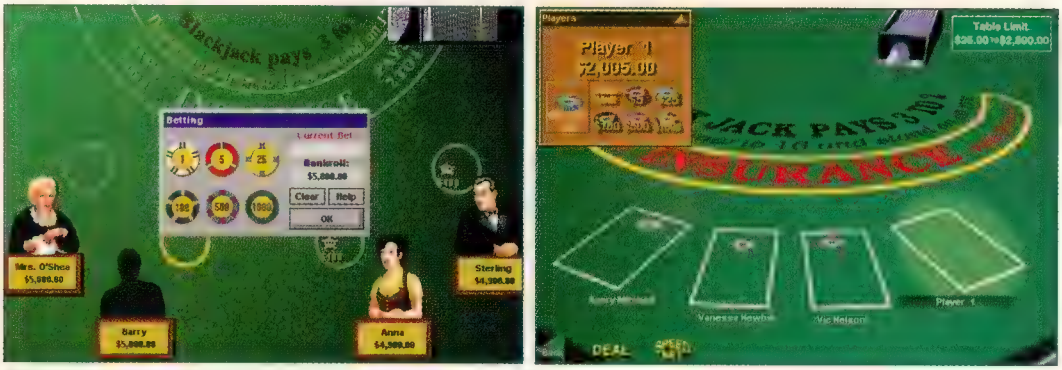


HIT ME AGAIN HOYLE CASINO (left) is slicker; BEAT THE HOUSE 2 is more realistic—both offer a pretty good game of blackjack.

by Barry Brenesal

This season's crop of casino games will hardly bankroll you to Vegas, but they can help you develop the skills needed to increase your chances of success. Sierra's HOYLE CASINO features basically the same crop of computer "personalities" as the rest of the HOYLE series. The usual Sierra polish extends this time around to include paintings and ancient Greek sculpture, which gives HOYLE CASINO the feel of being located in a second-rate art museum.

Interplay's BEAT THE HOUSE 2, on the other hand, emphasizes substance over style. At times, it pushes this approach a bit too far, as shown in the numbingly bland (if appropriate) cocktail piano sounds. Visually, BEAT THE HOUSE 2 lacks the crisp atmosphere of HOYLE CASINO, but neither game adjusts to higher resolutions, so anything other than 640x480 means a less-than-full screen.

Both packages include *Blackjack*, *Craps*, *Roulette*, *Poker*, and *Slots*. HOYLE tries to sweeten the deal by adding *Hoyle Friday Night Poker*, but BEAT THE HOUSE 2 adds *Video Poker*, *Mini Baccarat*, and *Poker Challenge*, which fit more properly in the casino context.

CARD COUNTING

BEAT THE HOUSE 2 offers a coaching feature that lets you get a suggested next move in any game. Yet its game options are relatively slim, as opposed to HOYLE'S, which are highly configurable. *Hoyle Blackjack*, for example, lets you choose casino-specific rules such as Vegas Strip or Downtown Vegas, and gives you the options of insurance, surrender, resplitting aces, dealer hits on a soft 17, and even choosing the number of points to double down after splitting.

The best thing about HOUSE is its thorough, intelligently written documentation by Avery Cardoza, noted gambling authority. HOYLE CASINO lacks similar documentation, and a paperback book by Steward Wolpin on poker is a poor substitute, since most of the games it discusses can't be played in HOYLE.

If you're interested in slick graphics and configuration, you could do worse than HOYLE CASINO, another solid entry in Sierra's HOYLE lineup. But BEAT THE HOUSE 2 supplies more authentic casino-style games and instruction for the serious player. In either case, it's hard to lose, since you avoid the potbellied, cigar-smoking, fiftyish crowd. Who says computer games don't raise the moral tone of life in general?

HOYLE CASINO

APPEAL: Electronic gamblers looking for a slick presentation.

PROS: Slick graphics; highly configurable.

CONS: Same annoying HOYLE computer opponents; only a fair gambling tutor.

CG RATED ★★

BEAT THE HOUSE 2

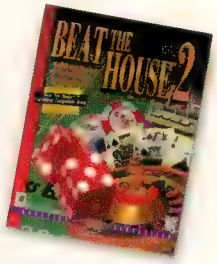
APPEAL: Those who want more authenticity in their computer gambling.

PROS: Several authentic casino games; good gambling tutor.

CONS: Bland graphics; not very configurable.

CG RATED ★★★

Price: $29.95
System Requirements: 486/66, 8MB RAM, SVGA graphics, 2x CD-ROM.
3D Support: None.
Multiplayer Support: Internet via SIGS (2–8 players); 1 CD per player.
Publisher: Sierra On-Line, Inc.
Bellevue, WA
(800) 757-7707
www.sierra.com



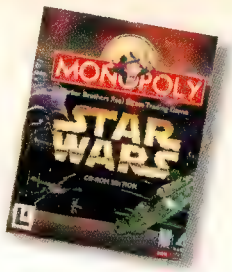
Price: $44.95
System Requirements: Pentium 90, 8MB RAM, SVGA graphics, 2x CD-ROM.
3D Support: None.
Multiplayer Support: Hotseat (2-4 players).
Publisher: Interplay Productions, Inc.
Irvine, CA
(714) 553-6655
www.interplay.com

★★ REVIEW • STAR WARS MONOPOLY

DIFFICULTY LEVEL: EASY

The Dark Side

by Kate Hedstrom



Price: $66 SRP/ $44 street
System Requirements: P90, Windows 95, 16MB RAM, 50MB hard-drive space, 4x CD-ROM.
3D Support: None.
Multiplayer Support: Modem, TCP/IP, IPX, Microsoft Gaming Zone (1–6 players); 1 CD per player.
Developer: Artech
Publisher: Hasbro Interactive Beverly, MA (800) 400-1352
www.hasbrointeractive.com

Westwood Studios set the computer *Monopoly* standard two years ago with a rock-solid, utterly simple-to-use game that was garnished with charming animations. Yet, in its zeal to computerize the popular *Star Wars Monopoly* board game, Hasbro seems to have forgotten the freshness and sense of fun that made PC MONOPOLY such a hit.

PLANETARY PARADISE The Imperial Palace in Coruscant is the Boardwalk of this MONOPOLY.

You can choose one of eight characters to play and then challenge up to five other human or computer opponents, or a combination of the two. The characters are an odd mixture of Imperial and Rebel persuasions, so you get to play a stormtrooper, but not Yoda. You may opt to play by the standard or short game rules, or select any of the common "family" rules, such a collecting cash on Free Parking.

C-3PO (with voice supplied by original actor Anthony Daniels) acts as a master of ceremonies and banker, announcing each move and making general comments at every opportunity. Thankfully, he can be turned off.

Gameplay is just like that of, well, MONOPOLY, with the addition of *Star Wars* movie clips and animation: A droid conducts monetary transactions; the Emperor Palpatine zaps the dice to roll them. All of this demands a lot from your computer. The contrast between playing on a P133 and a PII/300 is significant enough for it to seem like two different games, but even on the powerful machine gameplay sometimes slows to a crawl. Worse, the game suffers frequent lock-ups and crashes. It's still *Monopoly*, but, sadly, all the cool *Star Wars*-ness just gets in the way.

APPEAL: Those who must have every *Star Wars* collectible.

PROS: It's still MONOPOLY; *Star Wars* clips and animation.

CONS: *Star Wars* clips and animation; crashes and lock-ups.

CG RATED ★★

★★★ REVIEW • SHANGHAI DYNASTY

DIFFICULTY LEVEL: EASY

Shanghai Surprise

by Charlotte Panther

Price: $39.95
System Requirements: P90, Win 95, 16MB RAM, 40MB hard-drive space, 2x CD-ROM; supports Windows-compatible sound cards.
3D Support: None.
Multiplayer Support: LAN, Internet (1–4 players); modem, hotseat (1–2 players); 1 CD per player.
Publisher: Activision Los Angeles, CA (800) 477-3650
www.activision.com

SHANGHAI DYNASTY is the latest in Activision's mostly successful conversions of the classic tile game *Shanghai*. For serious fans of both *Shanghai* and *Mah-Jongg*, SHANGHAI DYNASTY warrants further investigation. Be prepared, though, for a few surprises—not all of them pleasant.

DYNASTY includes *Classic Shanghai*, *Shanghai for Kids* (a terrific way for children to learn the classic game while using their knowledge of mathematics and the alphabet), *Pandamonium* (you race against up to four players to match up tiles on a communal board), and *Dynasty* (you battle opponents on your own board). SHANGHAI DYNASTY also offers a very user-friendly version of *Mah-Jongg*. All the games offer different tile sets, layouts, and snazzy multimedia clips, and are certain to amuse single-player fans.

PING & PONG It's fine solo, but multiplayer SHANGHAI DYNASTY is a poorly-designed exercise in frustration.

When I challenged some of my pals to play over the Net, however, the game fell apart. The very nature of turn-based classic games like *Mah-Jongg* makes them perfect for chatting between turns, yet the developers included no chat feature during play! Worse, the "pass" feature in multiplayer *Mah-Jongg* causes each player to confirm that they can't use each discarded tile, which slows down play considerably, and this "feature" can't be toggled off. In general, multiplayer play of all the games is sluggish—the exact opposite of real *Mah-Jongg* or *Shanghai*.

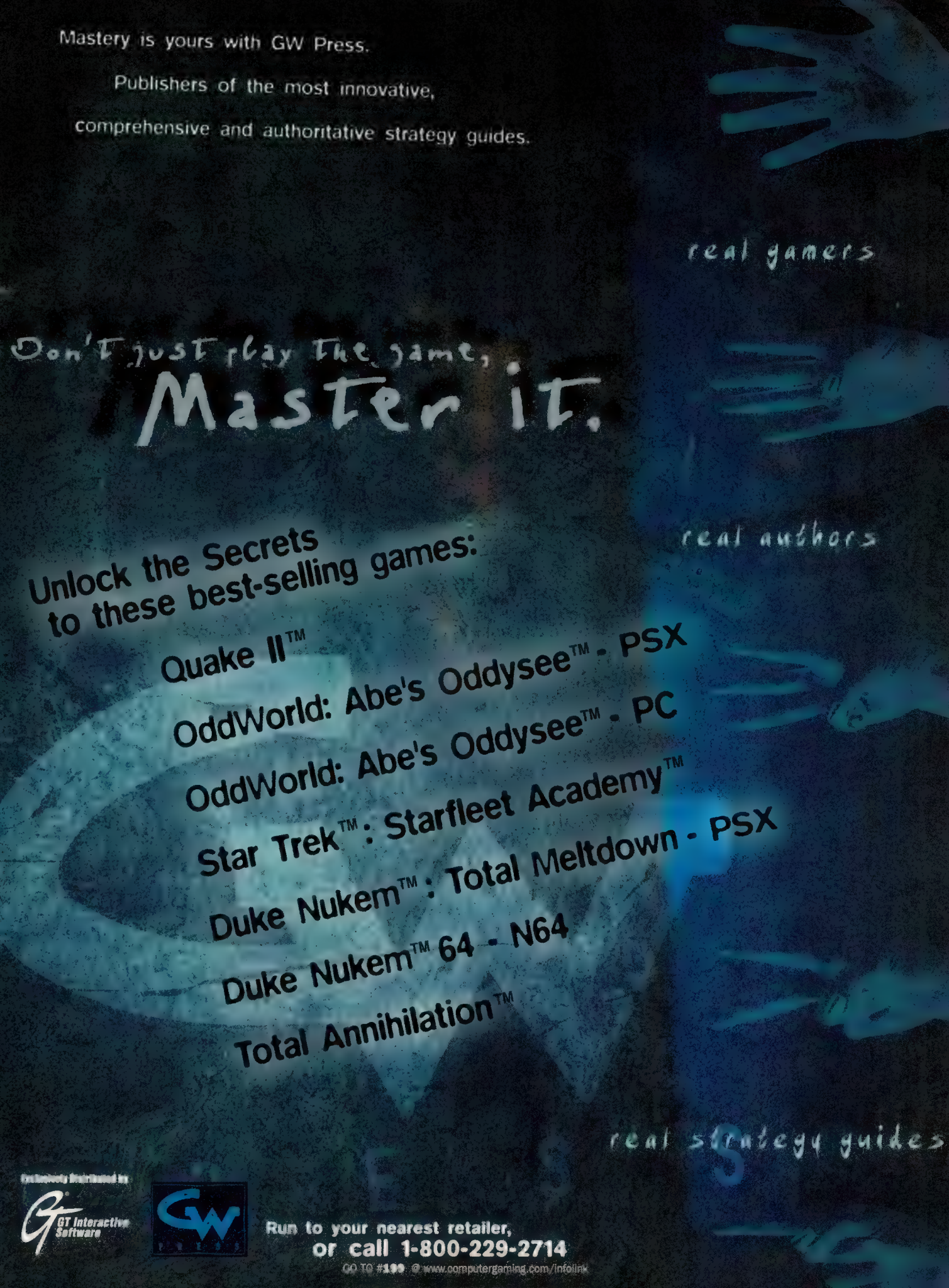
For those who merely want to wage their skills against the computer, SHANGHAI DYNASTY offers a nice collection of tile games. Those looking for competition from real-life opponents are advised to stick to the tabletop version.

APPEAL: Patient fans of classic tile games.

PROS: Simple and colorful; good documentation; fun solitaire mode.

CONS: Sluggish multiplayer games; can't play full-screen; no chat during play.

CG RATED ★★★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STRATEGY & TIPS

Sid Meier's Gettysburg!

Rally 'Round the Flag With These Tactical Tips

by Marc Dultz

One of the principal reasons Sid Meier has become such a successful game designer is because he keeps the individual elements of his games simple, combining these building blocks in such as fashion as to create a more complex, thought-provoking whole. In SID MEIER'S GETTYSBURG! you are treated to an engrossing, yet thoroughly effective, portrayal of the climactic engagement of the American Civil War, demonstrating in stark detail the vivid and terrifying destructive capability of tightly knit linear tactics. The following is a short examination of some of the fundamental military concepts of the time and the ways in which GETTYSBURG! simulates each facet of battle.

SHIFTING GEARS As the second echelon continues to advance by road, the first echelon shifts into a more secure formation.

Movement Rates	
Infantry in Line	Basic
Infantry in Column	2x Basic
Skirmishers	1 1/2x Basic
Infantry on Road	3x Basic
Mounted Cavalry	4x Basic
Limbered Artillery	4x Basic
Commander	4x Basic
Retreating Unit	2x Basic
Charging Unit	2x Basic
Double-time	2x Basic
Oblique Movement	2/3 of Basic
Forest	1/2 of Basic*
Marsh	1/2 of Basic*
Rocky Terrain	1/2 of Basic*

*Artillery moves through this terrain at 1/4 of Basic

Forward, March!

If trains weren't available, troops were generally forced to make road marches on foot to reach the battle site. Generally, division commanders opted to deploy their brigades in columns, one regiment following another, making best use of what few roads cut through the countryside and linked the towns together. Only when battle seemed imminent did commanders rescind these orders and re-deploy their troops off-road and into maneuver columns.

When the enemy came into view, the troops were again re-deployed, this time into battle formation, placing each regiment line abreast of one another. Regiments were evenly spaced by several yards to allow their commanders easy access to the front ranks while permitting skirmishers an avenue in which to withdraw.

Units move much faster by road than they do cross-country, even when units form up into maneuver columns. Furthermore, units advancing in maneuver columns move twice as fast as units deployed in battle formation; therefore, they can readily reach trouble spots or exploit penetrations in the enemy line. Limbered artillery travels as swiftly as

mounted cavalry, and serves as an excellent mobile reserve, able to shift position and fire to support front-line troops as needed.

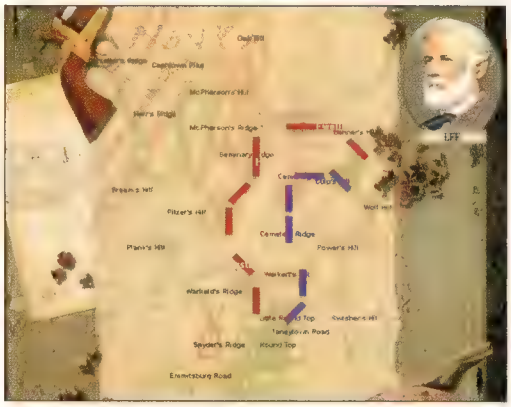
Battle Lines Are Drawn

Once the two sides met, each army attempted to seize the local high ground while deploying the remainder of its forces in broken or covered terrain for concealment and reduction of enemy fire effects.

Terrain Modifiers

Target's Location	Fire Effectiveness
Orchard	3/4 of Basic
Woods	2/3 of Basic
Town	2/3 of Basic
Rocky	2/3 of Basic
Boulders	1/2 of Basic

Skirmishers were thrown out ahead of the main body and were ordered to snipe at the enemy as they advanced in maneuver columns. Spread out to cover more terrain, skirmishers were typically employed to delay the enemy for as long as possible, and if possible, throw them into a state of confusion well before the attack got under way. Although skirmishers were harder to eliminate, they were much more brittle in combat, and tended to flee if deliberately charged.



FLANK STEAK Each Confederate attempt to outflank the Union is bloodily repulsed.

BATTLE IS JOINED! While leading brigades move into battle formation, the trailing reserve brigades are kept in maneuver columns to permit swift and flexible response.

LINE-OF-SIGHT The grayed-out regions here signify areas in which this Rebel officer has an obstructed view of the countryside, blocked in some instances by rolling hills, trees, and buildings.

Horse Soldiers

Cavalry was generally viewed as the best means of acquiring fresh intelligence regarding the whereabouts and proximity of the enemy's forces. Not only could mounted troops provide flanking protection and rearguard actions intended to delay the enemy's advance, they could also expeditiously reconnoiter the countryside and just as quickly report back with their findings. Unfortunately, at the battle of Gettysburg, cavalry was generally in short supply for both sides. The reconnaissance role was left up to the infantry (hence the early confusion on the morning of July 2).

Visibility Range

Unit Type	Visibility
Commanders	800 yards
Cavalry	400 yards
Skirmishers	400 yards
Infantry	200 yards

In lieu of cavalry, commanders serve as the next best way of gathering intelligence, especially if they can remain undetected and loiter on hilltops. Since each map square in GETTYSBURG! measures approximately 80 yards across, commanders are able to observe up to 10 squares distant. Cavalry and skirmishers can see half as far as commanders; while infantry, deployed either in column or in line formation, can view only two-and-a-half squares away.

STAND TO! A veteran Union brigade waits while its division commander scouts ahead for signs of trouble.

Digging In

Both sides deployed their armies into linear formations, which could generate the greatest sustained volume and concentration of firepower and offered the most flexible means of response. Those units not already drawn into the conflict would use the time to entrench, erecting fortifications out of fallen limbs, nearby rocks, or anything else available to them.

Formation Modifiers

Fortification Level	Fire Effectiveness
Light	7/8 of Basic
Moderate	3/4 of Basic

Meanwhile, artillery would be hurriedly dispatched and placed atop hills or along forward slopes to provide long range supporting fire. Canister was used at shorter ranges while round shot was generally used at longer ranges, especially if it could be used against enemy formations still arrayed in columns. In GETTYSBURG!, artillery can conceivably fire as far as a commander can see, making for a particularly nasty combination, especially if they can be situated together atop higher terrain.

Firing Ranges

Unit Type	Max Range	Effective Range
Infantry	150 yards	100 yards
Napoleon Artillery	800 yards	200 yards
3-inch Rifled Artillery	800 yards	150 yards

Formation Modifiers

Target's Location	Fire Effectiveness
Skirmishing Infantry	1/2 of Basic
Skirmishing Cavalry	1/3 of Basic
Column formation	5x Basic

After the initial engagement, both sides would rush reinforcements to the contested area, which ushered in the next phase of battle. Usually the struggle and size of the battlefield rapidly escalated, and the side possessing more materiel and manpower was better able to lengthen the lines and attempt to turn the enemy's flank. Once the flank was turned, it was relatively easy to roll up the remaining enemy troops and create havoc in the enemy's rear guard.

Flanking Fire Modifiers

Angle of Attack	Fire Effectiveness
At Flank or Rear	5x Basic
Oblique (60 degrees)	3x Basic
Oblique (45 degrees)	2x Basic

Charge!

Eventually, both sides committed the bulk of their forces to battle, attempting to bring their guns to bear on the weakest portion of the enemy line. Infantry units closed to within 150 yards of the enemy (just under two squares), unleashing one or two volleys of coordinated and simultaneous fire before switching to independent fire. Depending upon the circumstance, many commanders would order their troops to advance again in an effort to improve their firing accuracy and test the enemy's resolve.

Infantry in Combat

Firing At	Fire Effectiveness
Effective Range	Basic
Maximum Range	1/2 of Basic
1/2 Effective Range	1 1/2x Basic
At Lower Elevation	1 1/4x Basic
At Higher Elevation	3/4 of Basic

As the battle intensified and men began to succumb to enemy fire, the determination and conviction of the remaining troops increasingly came into question. As soldiers fell out and the ranks thinned, the rate of fire of the remaining troopers slowed until eventually the unit could no longer put up a fight or withstand the punishment. In GETTYSBURG!, keep a keen eye out for fluttering regimental flags since these units may be at risk to route and can, if left unsupervised, sow the seeds of insurrection for an entire sector.

Immediately order these units to fall back and regroup; if necessary, recall regiments on either side of the battered unit to help bolster its morale and lower its stress level. Meanwhile keep surveying the battlefield, taking note of any units that have suspended firing or are being fired upon from multiple directions. Make sure to periodically use the wheel command, reorienting hard-hit units to face in the direction containing the greatest peril. Conversely, keep a watchful eye on the enemy's regimental flags, and order your own units to charge these positions.

Effects of Stress

Stress Level	Fire Rate
2 Stress Blocks	1/2 of Basic
4 Stress Blocks	2/3 of Basic

Union forces retained a decisive edge in both manpower and materiel during the course of the war. The Confederacy countered with more astute and highly motivated commanders—men better able to inspire

FIELD OF FIRE As Rebel infantry re-deploy into a reverse wedge, artillery is brought forward to an overlooking hilltop.

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Thresh	Unabomber1

Frick: High-Ping Hellraiser of the PGL

If you've ever thought to yourself, "geez, there's no way I can compete with these players sporting cable modems, ISDN and even T1 lines to their homes. All I've got is this dinky 28.8 modem," you've got a lot to learn. Wes Culver, better known online as 'frick,' has one of the more modest systems with which to compete: a 200mhz CPU and a 28.8 (U.S. Robotics) modem. That hasn't stopped him from becoming one of the most feared players in the PGL's Quake division.

"I come from a home environment with a lot of built-in competition, with one older brother and one younger, so being fiercely competitive is in my nature," frick laughs. "My girlfriend, parents, and friends are always telling me how competitive I am, and I guess that's one of the main reasons I like playing Quake, and participating in a true league environment like the PGL, as much as I do."

NAME: Wes Culver SCREEN NAME: frick RESIDES IN: Cupertino, CA BIRTHPLACE: San Jose, CA Age: 19 GAMING EXPERIENCE: Street Fighter II, Mortal Kombat I, II, III, and of course, Quake GAME: Quake FAVORITE LEVELS/MAPS: DM2, DM3, DM6, E4M3 CONTROLLER: Mouse and Generic Keyboard PREFERRED WEAPONS: Lightning Gun and Rocket Launcher ARCH-NEMESIS: None ALSO PLAYS: Nothing regularly CONNECTION: 28.8 CPU SPEED: 200Mhz FAVORITE SAYING: "frick you!" HOBBIES, INTERESTS: Quake, IRC, Drawing, Basketball HONORS/AWARDS: Was co-captain of the Legends CTF team which won the Frag N Tag tourney (both HPB and LPB divisions).

DeepBlue: A perennial top-five Red Alert player discusses the art of war

As one of the world's premier strategists on Westwood Studios' Command & Conquer: Red Alert, DeepBlue, a.k.a. David Magro, might represent the future of the on-line gamer. Equal parts Eisenhower and arcade fiend, DeepBlue attacks his opponents with the kind of studied approach that will ultimately separate contenders from pretenders in the high-stakes arena of professional on-line play.

Disciplined, studied, and selfless, it's likely DeepBlue will remain a fixture on the professional gaming circuit. He's also the first to admit that staying on top will be serious work. "It used to be I had one real arch-rival," says DeepBlue recalling the earliest days of Red Alert on TEN. "Now that the PGL has attracted so many great players competing for so much money and fame, you can't worry about just one guy. You really have to watch your back."

NAME: David Magro SCREEN NAME: DeepBlue RESIDES IN: Rochester, New York BIRTHPLACE: Rhodesia AGE: 22 GAMING EXPERIENCE: Red Alert, one year GAME: Red Alert FAVORITE LEVELS/MAPS: A Path Beyond CONTROLLER: Mouse, Keyboard PREFERRED WEAPONS: Russian Heavy Tank ARCH-NEMESIS: "It used to be RuleMint 2, but there's a lot of them out there now." ALSO PLAYS: Quake CONNECTION: 28.8 modem CPU SPEED: 166 Mhz FAVORITE SAYING: "When I'm good, I'm good. But when I'm bad, I'm better." HOBBIES, INTERESTS: WebMaster HONORS/AWARDS: TEN 3-on-3 Tourney, numerous unofficial tourneys.

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and rally their troops at the most critical junctures of a battle.

At first glance, SID MEIER'S GETTYSBURG! seems rather rudimentary. Yet, beneath its polished and intuitive veneer lies a remarkably sophisticated game engine that is exceedingly difficult to master once the basic building blocks have been put into place. It goes to show that at least one military maxim does contain an ounce of truth: When in doubt, keep it simple, stupid.

Command Ranges

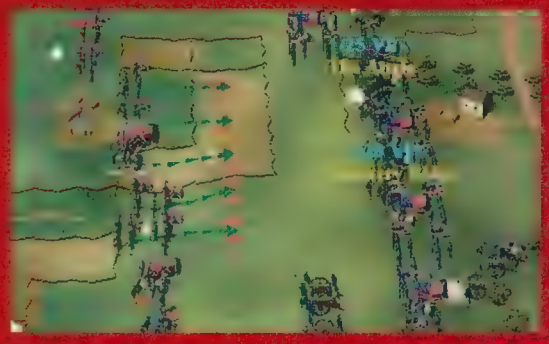
Command Rating	Yanks Rally	Rebels Rally
Mediocre	33 yards	50 yards
Competent	66 yards	100 yards
Experienced	100 yards	150 yards
Superb	133 yards	200 yards

HOOD-WINKED General Hood inspects General Law's battlefield preparations. Hood bolsters the resolve of the front-line troops with his superb command rating.

A House (and Interface) Divided

In real-time wargaming, it's never an easy feat to keep one eye on the battlefield and the other perusing a multitude of units and their many individual attributes. Nevertheless, the prudent player will constantly evaluate the stature, disposition, and alignment of every formation under his command in order to maximize their collective combat effectiveness and achieve local superiority on the battlefield.

Beyond various aural and graphical cues and animated indicators (entrenchment markers, fluttering regimental flags, rates of fire, states of readiness, and the like), you should continuously examine every unit's morale bar to determine each unit's current condition, combat experience, morale level, deployment, and general ability to follow orders. Five separate characteristics are graphically depicted, any of which may change each time the unit moves, shifts formation, or engages the enemy:



1. Experience Each eagle icon denotes a specific level of combat experience, ranging from "green" (inexperienced) men, to trained, veteran, and elite (a.k.a. "crack") troops. Note that green troops automatically start out with two icons, hence the extra eagle. Only battle-hardened units should be charged with carrying out sensitive duties.

2. Support Linear tactics mandate that each unit be properly supported by other friendly units—positioned on either shoulder or just to the rear—to prevent flanking attacks and dangerous defilade fire. Try attaching, then reattaching, regiments in a brigade, and shuffle the regiments around, placing more reliable troops on the flanks.

3. Covered Terrain Obviously, units deployed in broken or obstructed terrain are more concealed than units deployed out in the open, and they enjoy some measure of protection from enemy fire—especially enemy artillery. Place your own artillery atop unobstructed hills while infantry rings the forward slopes to protect the position.

4. Entrenchment Units arrayed in open terrain are far more susceptible to enemy fire than units situated behind walls, fences, or trees. So, if troops remain out of range of enemy fire, they will, on their own, begin to entrench. Note that when entrenched units are ordered to wheel and face in a new direction, they will still retain their original entrenchment value.

5. Command Units deployed near a commander are less likely to bolt under intense and prolonged combat. Moreover, the presence of a gallant leader permits a regiment to charge an enemy position and, in most instances, hastens the return of routed, demoralized units.

STRATEGY & TIPS

Close Combat: A Bridge Too Far

Practical Tactical Tank Tips and Anti-Tank Tactics

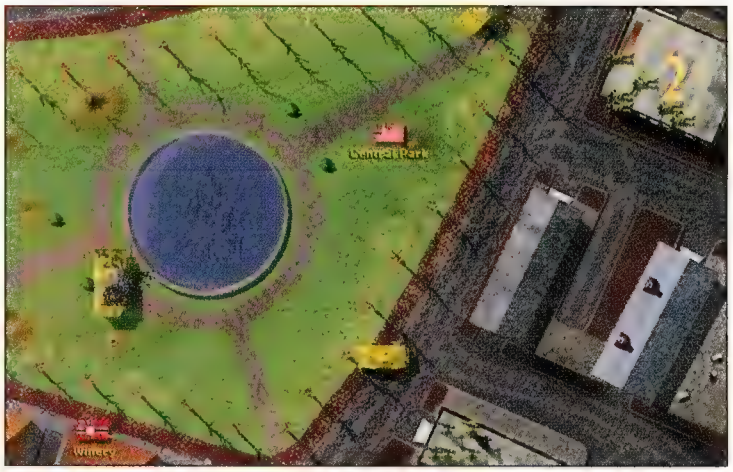
by Patrick C. Miller

Check out Patrick C. Miller's Close Combat 2 scenarios on the CG-ROM!

Find the companion article on Close Combat 2 Infantry Tactics at **www.computergaming.com**

General George S. Patton once said, "Good tactics can save even the worst strategy. Bad tactics can ruin even the best strategy." In Close Combat: A Bridge Too Far, proper tactics are critical to gaining victory. While initial unit deployment and having a plan to achieve mission objectives are important strategic considerations, they cannot make up for poor tactics.

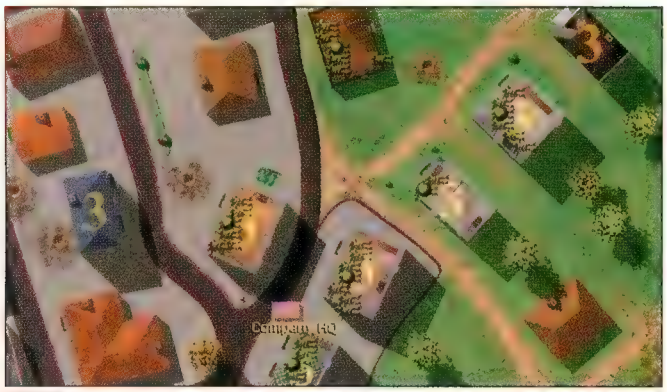
As the game's name implies, the simulated combat is at close range. Here, what matters most is how individual armored vehicles and infantry sections fire and maneuver. A single tactical error can be swiftly exploited to doom a brilliant strategy, while good tactics can sometimes salvage victory from certain defeat or reverse an apparently hopeless situation.



SQUEEZE PLAY After blundering into a trap between two Allied Shermans, not even this mighty SS Jagdtiger can survive a point-blank shot in the flank.

On Maneuvers

In Close Combat 2, armored vehicles often act as if they're driven by vision-impaired driver's ed students. Give a tank an order to move somewhere and chances are it will find the most ludicrous way to get there or become stuck trying to go somewhere it shouldn't. This can result in a vehicle being destroyed for no good reason—a most frustrating experience.



AMBUSH ROW A Bazooka team is deployed among friendly infantry to protect it from enemy troops. The three-level building the team occupies overlooks a key road near an objective—a likely path for enemy tanks—and provides cover and concealment.

The secret to maneuvering armored vehicles is to baby-sit them. Avoid using the Move Fast command unless a vehicle is in an open area. In close terrain or towns, the Move command is better because vehicles tend to follow more logical paths and get stuck less often. Another key is to move vehicles in short hops of a few inches at a time. The more confined the terrain, the shorter the movement distance should be.

Pay close attention to how and where the vehicle is moving, particularly in towns, where tanks tend to become stuck against buildings. If it looks as if the vehicle is driving into the corner of a building or trying to fit through a space that's too narrow, immediately have it back up. To do this, issue a Move order and then place the movement dot about an inch directly behind the vehicle.

If that doesn't work and the vehicle becomes stuck, cancel all movement orders by issuing a Defend command. Many times, the AI will find a way to maneuver the vehicle away from a structure and into a position from which it can be moved.

Case Study One: HE or AP?

In the streets of Nijmegen, a British Sherman armed with a 76mm gun emerges from around a street corner to engage a German Panther that has been mauling Allied infantry. Because the Panther is stationary, it fires first and scores a hit on the Sherman. The British tank shrugs off the hit, stops, fires, and brews up the Panther. What happened?

Because the Panther had been firing at infantry, it had a high-explosive (HE) round loaded when the Sherman appeared. While an armored-piercing (AP) round from the German tank's 75mm gun could easily pierce the Sherman's armor, the HE round had no effect. The Sherman had an AP round loaded, which could penetrate the Panther's armor. Thus, the superior German tank was destroyed by the inferior Allied tank.

Tank vs. Tank

Some players make the mistake of assuming that German tanks are superior to Allied tanks. While this was historically true, the distances at which battles are fought in this game combined with the terrain density of many maps reduce German advantages in gunnery and armor protection. In this setting, even the lowly Stuart light tank poses a significant threat to the deadly Panther—if it uses its speed and mobility advantage to maneuver for a side or rear shot.

Players using German armor should also note that turret rotation speed is taken into account. Because American-built tanks used variable-speed electric turret traverse, they could track moving targets better and bring their guns to bear more quickly, providing the advantage of firing the crucial first shot in a quick-draw engagement. American-made tanks also had gun stabilizers fitted, which helped them fire more accurately on the move.

Another useful tactic is to deploy a tank in position with a good field of fire and give it a Defend command. Many times, an AI-controlled tank will spot and fire at targets of opportunity more quickly than you can respond. This is especially true on maps such as *Son South*, where tricky line-of-sight comes into play.

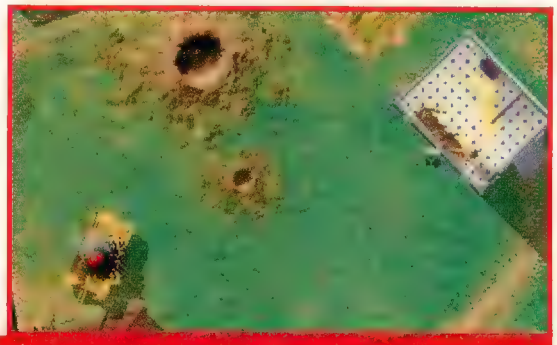
Infantry vs. Tanks

The Panzerfausts carried by individual German infantrymen and the availability of relatively inexpensive Panzerschreck anti-tank teams gives the Axis a potent tank-killing combination. With these anti-tank weapons alone, it's possible for the German infantry to withstand and repulse an Allied armor assault.

With the Allies, the situation is much different. They rely mainly on PIATs and Bazookas to defeat German armor. These weapons have limited range (70 meters for the PIAT, 80 meters for the Bazooka) and are effective against Panzer Mark IV tanks and lighter armor. But against such opposition as Panthers and Tigers, only shots from the side, rear, or top stand a chance of causing damage. Therefore, the best position for a PIAT or Bazooka team is in a multi-level building where it can fire down into the tank's thin top armor, virtually assuring a kill from any angle.

Once spotted by the enemy, PIAT and Bazooka teams attract fire from small arms, tanks, and mortars. Even if it isn't eliminated, the team will acquire so much suppression that it will be lucky to hit anything. To avoid suppressive fire, keep the anti-tank team stationary and hidden until it has a good shot. If a team must be moved to a better location, use the "Sneak" command to reduce its chances of being spotted and fired upon.

The AI rushes armor support to spots where its infantry is in trouble. Knowing this, the best tactic is to set up an ambush in terrain that forces tanks to close within effective Bazooka or PIAT range. By studying the terrain and anticipating the paths that enemy tanks are most likely to follow, anti-tank teams can lie in wait for enemy vehicles. Be sure to provide infantry support to prevent anti-tank teams from being overrun by enemy infantry.



Case Study Two: Anti-Tank Machine Guns

A German StuG III assault gun breaks through American lines at Schijndel, threatening to collapse the defensive line. The German vehicle halts near a three-level building in which a .30-caliber machine gun team is hiding. The GIs open fire and destroy the marauding enemy vehicle. What happened?

Normally, expecting a machine gun team to take out a fully enclosed armored target such as a tank or assault gun is pointless. However, most machine guns—German and Allied alike—possess a limited degree of armor-penetrating capability that can be useful against lightly armored targets such as half-tracks. In this case, because the machine gun was firing from above at point-blank range, it was able to penetrate the vehicle's much thinner top armor.

STRATEGY & TIPS

Longbow 2

Part 2: Managing the Strategic Campaign

RULES OF ENGAGEMENT

by Tom "KC" Basham

Most simulations treat you like the average line pilot: the brass (a.k.a. the computer) assigns the missions, and it's your job to execute them. A few sims (LONGBOW 2 is one) let you play a larger role by managing an entire squadron. In such cases you have more to worry about than bringing your helicopter back in one piece. Now, you have to worry about *every* pilot achieving his assigned goals *and* accomplishing all of the required tasks as well as not running out of pilots, helicopters, or ammunition. It's a much bigger job, but for the strategists among us it's also a more fulfilling job.

MISSION CRITICAL Although the computer will generate missions for you, you'll do better if you use LONGBOW 2's excellent mission planner to manage your resources.

Right Tool for the Job

It may be an old cliché, but it could be the single most important lesson of all: Use the right tool for the right job. What does that mean exactly? First, it means matching the ammunition to the target type, which boils down to a matter of balance. On the one hand, make sure the ordnance you're sending out is sufficient for the task at hand. Make sure it has ample firepower to destroy the assigned target. On the other hand, don't waste expensive (and possibly hard to obtain) ordnance on inexpensive targets. Do you really want to fire several million dollars' worth of missiles at a truck that cost the "People's Democratic Republic of Wherever" a few thousand dollars to build? Depending on the truck's cargo, the answer may be yes, but more likely, it's no.

THE RIGHT TOOLS Mixing helicopter and armament types within a single flight offers maximum flexibility.

Second, using the right tool also applies to the type of aircraft used and even the crew assigned (if the simulation identifies pilot skill levels, as does FALCON 3.0). Does the mission *really* require two AH-64Ds both carrying the Longbow radar and radar-guided Hellfires, or will a laser-equipped Apache serve equally well? Moreover, can a UH-60 or an OH-58 suffice? Using Blackhawks and Kiowas for "light" sorties frees your "big guns" for the more demanding assignments.

I typically start by assessing the firepower needed to neutralize the target (see the sidebar "Mission Kill"), then I estimate the enemy's

Mix and Match

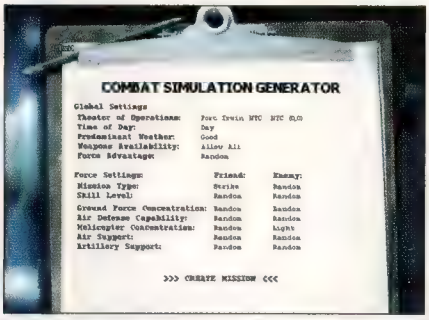
Generally, I save Blackhawks for the "lightest" combat sorties. Since the UH-60 is the only helicopter at your disposal capable of extracting troops, it's unwise to risk them all on other types of missions. A pair of Blackhawks armed with rockets works well against soft targets like infantry and unarmored vehicles.

Use the Kiowas aggressively. Although they don't carry much ammunition (compared to an AH-64), they do pack a decent punch. With four laser-guided Hellfires on board, the OH-58 can do serious damage to a convoy, a tank platoon, or even a hardened bunker. The Kiowa can't absorb as much damage as an Apache, though. If the area is heavily defended, consider sending Apaches instead.

Also, try mixing Longbow and non-Longbow Apaches in a single flight. This seems to be a particularly effective package. The Longbow can eliminate the SAMs and AAA by using the radar-guided Hellfires. Once the enemy's defenses are neutralized, the Apache can move in and engage the remaining targets using laser-guided Hellfires.

defensive capabilities. Next, I look for an aircraft that can carry the necessary ordnance and survive the estimated return fire. Overall, these decisions are highly subjective and are based mostly on experience. Review the available intelligence, then listen to your gut. The more missions you plan, the more you'll learn.

Being an engineer, I've found simple mathematics helpful with mission planning. While you'll undoubtedly want to develop your own system, I often apply numerical values to individual weapons, based on range and firepower. I also assign point values to individual targets. This helps me assess priorities against my capabilities. In some cases, if one particular target greatly out-values another I may even pull my forces and concentrate only on the high-value target (although I'm sure my superior officers would not be pleased).


COMBAT SIMULATION GENERATOR
Global Settings
Theater of Operations: Fort Irwin NTC NTC 03,03
Time of Day: Day
Predominant Weather: Good
Weapons Availability: Allow All
Force Advantage: Random
Force Settings: Friend: Enemy:
Mission Type: Strike Random
Skill Level: Random Random
Ground Force Concentration: Random Random
Air Defense Capability: Random Random
Helicopter Concentration: Random Light
Air Support: Random Random
Artillery Support: Random Random
>>> CREATE MISSION <<<

PRACTICE MAKES PERFECT Use the quick mission generator to practice mission planning.

Timing Is Everything

Once you've allocated your forces, you then must decide how to get them to the target and back. Timing is crucial, especially if you send multiple flights against a single target. Real-world Apache pilots have told me that they're expected to reach each waypoint within 30 seconds of the assigned time. Fortunately, LONGBOW 2's mission planning interface lets you manipulate the Time On Target (TOT), the time at which a given helicopter should reach its target. In the planning interface, right-clicking on any waypoint displays statistics about that waypoint. Toward the bottom of the information box you'll see the time the helicopter is expected at that waypoint plus a "loiter" item. If you're having trouble coordinating the timing between flights, adjust the loiter values at various waypoints for the faster flights.

To test your timing, use LONGBOW 2's "rehearse" feature. This walks through the mission at increased speed, displaying the positions of the various aircraft as time progresses. This substantially eases the task of coordinating multiple aircraft. A simple typo when entering an airspeed value can ruin even the best combat plan. By using the rehearse feature you can quickly identify and correct such errors.

LONGBOW 2 has a very comprehensive mission-planning interface. It gives you a lot of options, but it also forces you to make some hard decisions. Since no real lives are at stake, don't be afraid to experiment. Always evaluate the results of each mission, especially missions that don't work. These guidelines will get you started, but, in the long run, there is no substitute for experience.

THE LITTLE GUNS Don't assign two Longbows when an OH-58 Kiowa Warrior will suffice.

Mission Kill

Anyone remotely associated with aerial combat has undoubtedly heard the adage, "A kill's a kill." In other words, it really doesn't matter *how* you did it, it just matters that whatever you did worked. As an extension of that concept, it's not always necessary to actually destroy the enemy target. Considering that the target has some objective of its own, simply preventing it from achieving that goal may be good enough. For example, a bomber forced to drop its payload and return to base before attacking friendly forces would be a *mission kill*. Although you didn't manage to shoot it down you did prevent it from shooting any of your allies.

Obviously, it's better to actually destroy the bomber than to let it escape. Otherwise, it'll make another attempt against you tomorrow or the next day. Still, you kept your allies alive today. Perhaps tonight they'll capture the bomber's base!

Conversely, you must guard against *becoming* a mission kill. En route to your target you'll likely encounter numerous other targets of opportunity. Destroying extra enemy targets is obviously a good thing—as long as you still accomplish your primary mission. It may be tempting to lob a few Hellfires at a particularly annoying SAM site, but before firing verify that you will still have enough ammo left to destroy the primary target. If the convoy carrying chemical weapons escapes while you're screwing around, you may survive the mission but you were ineffective. You just became a mission kill.

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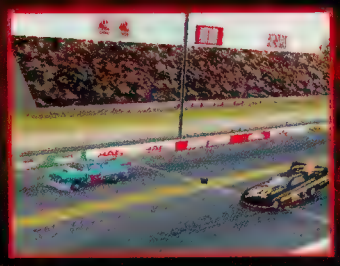

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STRATEGY & TIPS

The Curse of Monkey Island

Ahoy! Here Be the Map That No Would-be Pirate Should Be Without

by Thierry Nguyen

Thwarting the schemes of a mad demon pirate while avoiding three-headed monkeys is no easy task. Yet, such is the life of our intrepid Guybrush Threepwood. There are a great many puzzles thrown in to stop Guybrush's quest, but never fear, the crew here at *CGW* (*Caribbean Gaming World*) are ready to help you with some of the tougher puzzles in CURSE OF MONKEY ISLAND. Of course, only beardless pirate-wannabes play on "Normal," so we're talking about the Mega-Monkey version here.

PAIN IN THE... You should be an annoying kid to Dinghy Dog.

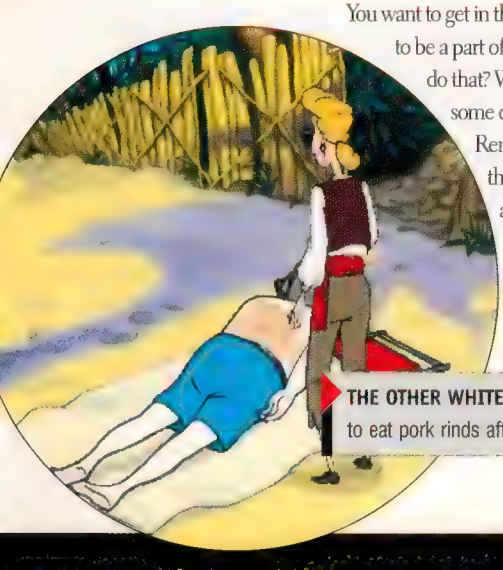
X Marks the Spot

So, Palido Domingo won't book you a trip to Blood Island, huh? He *will* let you look at the map on his back, provided that he has a tan. The only problem is that he's paler than bleached chalk, so you're going to have to make him tan rather than just leaving it up to the sun.

Palido assumes that you're a waiter here to refresh his drink. Before you perform such a waiterly task, you should recall where else you've seen a mug. Take care of that affair, and don't ignore those "laundry vats." Give Palido his instant tan, and watch him turn over. While you ponder your new predicament with his back, pay a visit to the cabana boy. Get your vengeance with him, male-locker-room style, and pick up what was denied to you. And yes, you *will* be using that item. Pork rinds, anyone?

I Really Am Your Grandfather!

You want to get in that crypt, yet you need to be a part of the family. How do you do that? Well, you'll need to do some creative renovating first. Remember, you can look through that porthole, and that painting of Lambert Goodsoup isn't nailed down very tightly. And you thought the room with the discarded paintings was useless!



THE OTHER WHITE MEAT You won't want to eat pork rinds after solving this puzzle.

Of course, a face isn't enough, you need to know your history. Assuming you've fulfilled the Voodoo Priestess' prophecy, you should make a beeline for the mysterious hotel room. Sure, the door is locked, but how did you get back into your dorm back in your college days when you lost your keys? If you're stuck on keeping that bed down, remember how the painting earlier wasn't nailed down tightly.

And finally, when you're trying to collect on your policy, you'll need some proof. Go back to the hotel, grab some cheese near the fridge, and keep an eye out for a certificate.

Your Inner Child

Okay, you're a little tyke, and you need to clear your head again. You'll first want to play Dinghy Dog's game, and take advantage of the fact that you're a man in a boy's body. And don't forget to annoy Dinghy Dog; get physical while you're at it.

For the eggs, you need to become the clown, which requires you to knock down the current clown. A good substitute just needs cream in a tin, with a bit of weight for that added "oomph" factor.

For pepper, the only place to look is at the local food stand. Once you've gathered the ingredients, just chug it all with some snow to wash it down.

Those of you who stuck with it through these sticky points will be able to progress on in the game and thwart LeChuck for the last(?) time. And when you do, make sure you hang around after the credits, for as with all other LucasArts' adventures, there is something extra at the very end.

STRATEGY & TIPS

Quake II

You, Too, Can Dominate QUAKE II DeathMatch

by V. Long

QUAKE II DeathMatch is not QUAKE I DeathMatch. You'll need to learn some new tricks to dominate your adversaries in QUAKE II. There's so much strategy to discuss, this guide will be in two parts. In this issue, you'll learn weapons training, rocket-jumping, and PsychOps. Next month we'll explore more level-specific tips and give you level maps from id's QUAKE II DeathMatch pack.

Of course, you'll still need all the fundamentals I outlined a year and a half ago in *CGW*'s September 1996 issue. The basics cover more than simply how to run and lead your targets. You need to take the time to learn the levels. You also must be able to "mouselook" (the ability to use the mouse to look freely in all directions) and "circle-strafe" (circling around a target while shooting at it). Circle-strafing is simple: Point your gun at the target, sidestep (using your preassigned key) in one direction, and turn (using the mouse) in the opposite direction to keep your crosshairs on the target. For example, to circle left, you sidestep left while turning right. Make circle-strafing second nature; otherwise you may as well go back to playing with dolls.

QUAKE II adds new features and, thus, new wrinkles. Among the first things that players notice is the ability to crouch. While crouching is often required to scoot into tight spots to retrieve weapons and other goodies, it's not as good for evading attack as you might expect. It slows down your rate of movement. Often you can simply jump over a shot, and jumping doesn't limit your speed.

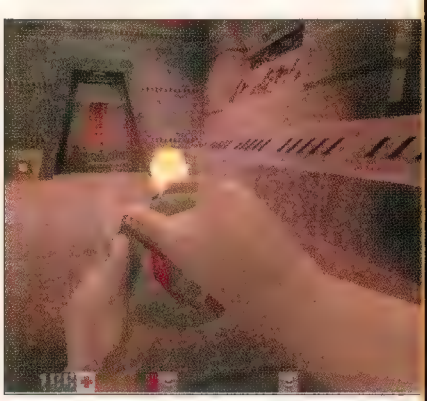
Weapons Training

Forget about the naysayers who claim that crosshairs are a crutch. From what I've seen, crosshairs are a *big* help, especially if you keep mouselook locked on. Although they are not perfect, crosshairs give you a good idea of where your shots will most likely land.

Crosshairs are most helpful when using the railgun to pick off victims at long range. The crosshairs are of less use with rockets because splash damage makes dead-on aim less important.

Think, think, think! Naturally, each weapon has its own unique set of advantages and disadvantages. As in the original QUAKE, you need to think ahead and ready the best weapon for the given situation. QUAKE II takes it one step further by adding a delay for weapon

ON THE DOT Crosshairs are a help, but which is better—regular crosshairs, the laser-dot, or angle crosshairs? Use regular crosshairs: They don't get lost in fierce fire fights.



LIGHT UP MY LIFE Most of the weapons will give away your position with noise and light. Surprise unsuspecting victims by tossing hand grenades.

The Tool Box

While I'm not generally a fan of using specialized equipment for games, I encourage anyone who wants to maximize his or her mousing pleasure to follow the advice I got from Dennis "Thresh" Fong: Get 3M's Precision Mousing Surface (**www.3M.com**). No, it won't make you as good as the legendary Thresh, but it will vastly improve mouse tracking accuracy. It's a bit expensive for a "mousepad," but it's simply the best I've tried. No more of that dreaded rodent stutter or skipping that will get you killed in the heat of battle.

Unless you have an incredible set of speakers, you're better off with a pair of good headphones. The environmental noises provide so much useful information. In QUAKE II, you need to use your eyes *and* your ears.

Don't be afraid to use macros and config files. Almost all good players personalize the mouse and keyboard configurations. It costs nothing, and can maximize your performance.

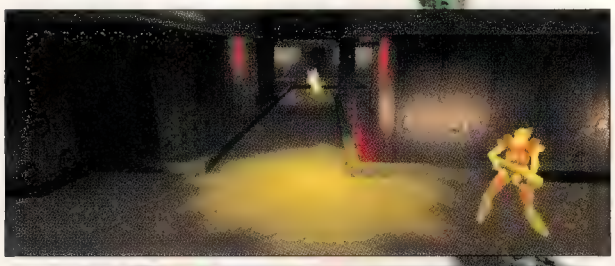
switching. Fumbling for a better gun in the middle of a gunfight will likely get you fragged. This also means that you want to use a weapon with enough ammo to last through the fire-fight. If your favorite gun is low on ammo, seriously consider using another one that's fully loaded.

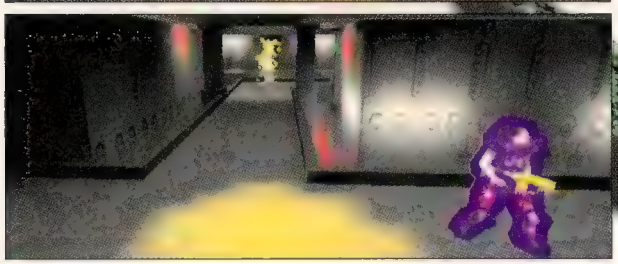
For many players, the rocket launcher is the favorite weapon. Direct hits are quite deadly, and near misses still inflict splash damage. During melees, expert DeathMatchers often do not aim directly at the victim. Instead, they aim at the enemy's feet to guarantee that each shot hurts. Remember, if the rocket sails by completely, you've not only wasted a shot, but you've also given the target a shot at you.

Another benefit to using explosives against others is that the blast spoils their ability to return fire. Getting knocked around can sure mess up your aim and scramble your brains.

Explosives are also quite handy for testing suspicious doors and corners for ambushes. If you face someone who likes to duck around a doorway or corner to turn the tables on pursuers, simply fire a rocket so that the blast flushes the trickster from the hiding spot. One of my first kills against the legendary Dennis "Thresh" Fong happened this way.

Another important aspect of QUAKE II DeathMatches is the Quad Damage power-up. Quad Damage is an item that quadruples the damage your shots inflict. Too many players mistakenly equate the Quad Damage with Invulnerability, and act accordingly. Although Quad Damage can make you more lethal, it does not offer extra protection. If your opponents shoot back, you can still die. If your opponent has the Quad Damage, you can still duke it out...just be careful to avoid getting hit, because it will hurt a lot more.



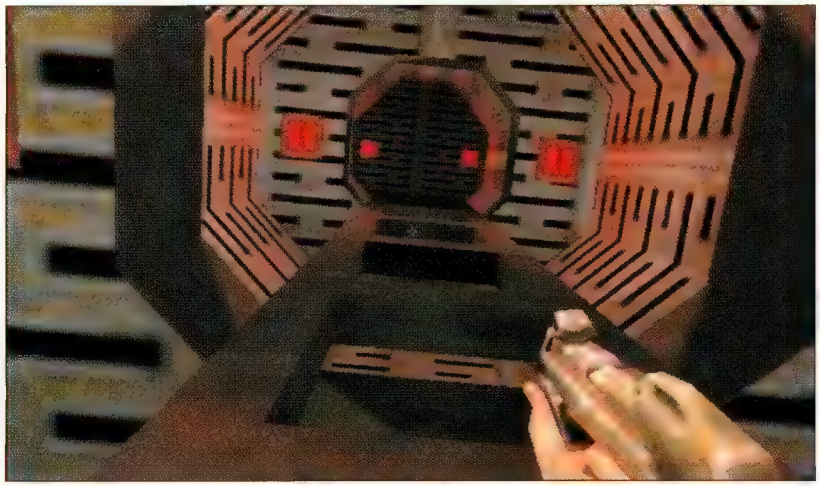


I GOT THE BLUES Just because you have Quad Damage doesn't mean you are invulnerable. Don't get too cocky.

Catching Air

Rocket-jumping has evolved from a bizarre novelty to a "must-have" move in the accomplished DeathMatcher's repertoire. The basic concept remains the same: Run forward, look down at your feet, jump, and then launch a rocket directly into the ground beneath you. Because this move will hurt you, be sure to load up on health and armor. QUAKE II adds new wrinkles: You can no longer change direction in mid-flight. Plus, being right- or left-handed will affect your trajectory. I prefer to stick with center-handedness for truer flight.

Variations of the rocket-jump include the grenade-jump (hopping onto a live grenade) and the barrel-jump (shooting the explosive barrel beneath you). Extreme variations include the grenade/rocket-jump (rocket-jump in tandem with grenade jump) and barrel/rocket-jump (rocket-jump combined with barrel-jump).



SHOOTS AND LADDERS Instead of using the "down" or "crouch" key to descend a ladder, simply use "mouselook" to look down and then *run* down the ladder.

Arguably the big daddy of all jumps is the BFG-jump, reportedly first perfected by id programmer John Cash. The BFG10K packs a wallop. On the Outer Base (the very first QUAKE II level), a BFG-jump from the rocket launcher spot can fling you to the top of the building, so you can get a better view as the drop ships fly by. Although a BFG-jump will hurl you much farther than a rocket-jump, it also takes a bigger bite out of your health. BFG-jumps typically inflict over 100 points of damage, so be sure to wear lots of armor.

Then there is "lava-skipping." According to designer Tim Willits, it's possible to use the more realistic physics in QUAKE II to traverse lava. Although I lack the skill and luck required for lava-skipping, Willits says that you can hop atop grenade blasts to keep from sinking into lava. Again, you'll want plenty of health and armor to survive this antic.

Parting Shots

Don't fret if these pointers and tactics don't feel comfortable at this point. You will naturally incorporate many of them into your style of play as your skill and experience grow. In the end, there's only one real rule: Superior firepower may not bring happiness, but it sure helps!

For more DeathMatch tips, see next month's strategy guide. We'll also include exclusive maps of the DeathMatch levels from id's upcoming QUAKE II DeathMatch maps. If you want map advantage and even more tips, you won't want to miss next month's installment.

Give 'Em the Bird

Besides the addition of the female character and numerous skins for both genders, QUAKE II gives players the ability to gesture to each other. You can point, wave, salute, grab your privates, and even flip someone off. To truly rattle or enrage your adversaries, give them the bird before delivering the deathblow. The gestures are defaulted to the following keys:

- h = flip the bird
- j = salute
- k = grab your crotch
- l = wave
- u = point

Playing With Their Minds

PsychOps. That's the official military mumbo-jumbo term for using all sorts of nasty tricks to outwit your adversaries. Many QUAKE tactics carry over well into QUAKE II. A classic new tactic is to scare a jittery opponent by using a chain-gun to hose them down in a tight corridor.

Always cover your ass. If you must retreat, try to run backwards so you can keep your guns on your pursuer. Toss grenades to discourage pursuit.

Think twice before picking up weapons or items that you don't need. A clever player will notice missing goodies, and may be able to track you as if you left a trail of bread crumbs. QUAKE II adds the ability to selectively drop items. This feature forms the basis for what Tim Willits calls the "bait the sucker" ambush. Most players have an uncontrollable pack-rat habit of collecting any weapon or item in sight. Willits will drop one of his less powerful weapons (or a big one that's out of ammo), and then hide in a vantage point with his crosshairs trained on the bait. As soon as someone attempts to scoop it up, Willits rewards the sucker with a rail-gun slug to the noggin.

Indeed, QUAKE II adds new PsychOps possibilities to the DeathMatch cauldron.

To the veteran warrior, noises reveal much information. Indeed, the hard-core insist on wearing headphones to better identify and pinpoint tell-tale noises. Slogging into and out of water alerts everyone within earshot as to exactly where you are and what you're doing.

While running makes you harder to hit in a fire fight, running when there's no threat of attack is a bad idea. The din from your scurrying feet can give away your location and direction of travel.

However, you can also use noise to fool others. When no one is in sight, jump once or twice. When others hear the grunting but can't get a fix on your position, they may be confused into thinking you're somewhere that requires jumping.

Similarly, fake a ride on an elevator or lift. Simply step on to activate it, then quickly step off and hide somewhere to ambush the person who intended to ambush you.

You can also draw someone into an ambush by feigning lack of ammo. Switch to the feeble blaster, and fire enough shots at the target to convince him that your better guns are out of ammo. As the victim comes in for the kill, switch to something with clout and shoot. This tactic, of course, requires good timing, due to the delay in weapons switching.

STRATEGY & TIPS

Seven Kingdoms

Some Quick Tips to Get Your Civilization Up and Running

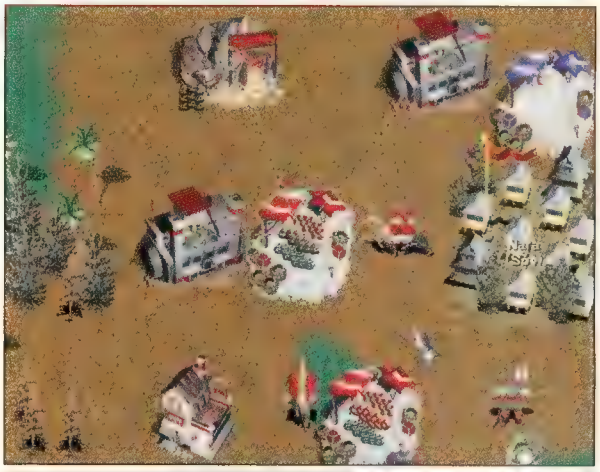
SEVEN KINGDOMS is a rare gem among the dozens of real-time strategy games in that it's deep and complex. What specifically sets it apart from other games are the diplomacy, espionage, and economic aspects of the game, which go far beyond anything done before in real-time strategy. SEVEN KINGDOMS can be a very overwhelming game, so I'll give you some hints to get you on your feet. What follows isn't a full-blown walkthrough, but simply a quick-start guide. There is a more complete strategy guide on our Web site at **www.computergaming.com**.

SEVEN KINGDOMS is rich in setup choices, and the most important choice you'll make is in choosing which race to play. The initial strategy I suggest is to spread out quickly and rush independent towns in the very beginning of the game. The powerful Vikings are perfect for this strategy.

Attacking Early

Early in the game, improve your town with the appropriate buildings (mine, factory, market), but also gear up your forces for war. Get eight men into your fort as soon as possible. Once you have a group of eight men with 25 combat, go on the warpath. (As soon as the first eight soldiers sally forth from your fort, add eight more to train for future campaigns.) Pick a close, independent village and lead the charge against it with your king. This early in the game, independent villages have low populations and only a few, poorly trained men to fight against your conquering force.

After this initial conquest, don't let up. Promote one or two soldiers to the rank of general. Have one stay at your newly-conquered town, and send the other with your battle-hardened troops to take another independent town. (Send your king back to your hometown for rest if he gets too badly injured.) Repeat this process and take a few more independent towns. You must establish a foundation for a large empire. This early in the game, there should be little negative impact on your reputation, since it's low to begin with.

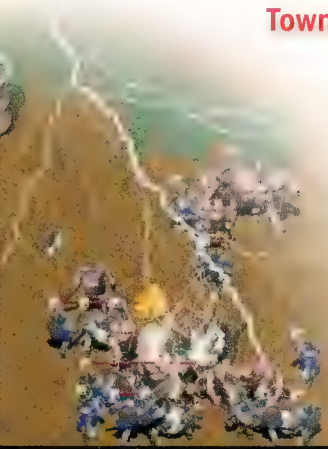


WAR AND PEACE Build mines, factories, and markets to get your economy going, but also start training troops for early conquest.

Town Loyalty

Capturing towns is the easy part; maintaining a newly-acquired village's loyalty is what's difficult. You can battle Frhytan lairs to increase loyalty, but this is a dangerous tactic; there is an easier method. Keeping a town busy will make it more amenable to your rule. First, build a connected fort next to the town. This allows you to grant money, levy taxes, and draft villagers for work. Promoting a same-nationality general after the town's loyalty is repaired will also increase loyalty.

After the fort is built, give the people as many money grants as you can afford, in order to raise their loyalty above 50. The effects of grants are only temporary. To permanently raise loyalty, you'll have to give the people things to buy and work to do. Build a market and have caravans begin delivering goods there for sale. A healthy stockpile of goods to buy does wonders to increase a town's loyalty. Also, start building additional structures, such as war factories or science towers, where villagers can work. If the town is near an ore deposit, build a mine and a factory. All these buildings will raise your subjugated town's loyalty substantially.



MONSTER MASH Battling Frhytan lairs can increase your reputation and your empire's loyalty, but don't do it until you have enough troops to battle waves of monsters.

Individual Loyalty

Just as important as maintaining village loyalty is maintaining your personnel's loyalty. Again, give them something to do and they will follow you. If generals have troops to train in forts and lead into battle, their loyalty will climb. If not, it will fall until you give them men to command. Likewise, if you leave construction workers idle, they will be less loyal. Also, bestow honors on your men.

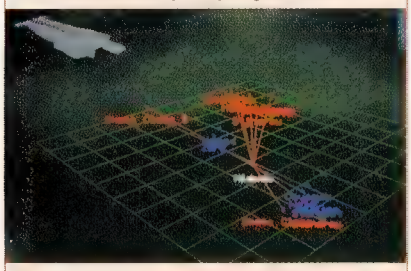
I hope these tips will get you started on a successful game of SEVEN KINGDOMS. For more tips, see our guide at **www.computergaming.com**.

CTIPS!

Simulations/Space

Wing Commander Prophecy

Enemy Mantas are heavy fighters, which means they can dogfight *and* carry capital-ship–killing torpedoes. So, always target Mantas first in any mission—especially the Red Mantas, as they carry torpedoes.



When you're in a mission that requires defending a friendly vessel, pull up the Navigation map with Ctrl-N, and target the ship you're honor-bound to protect. Here, the red lines on your Nav display indicate which enemy craft are attacking the Confederation carrier Midway—obviously your primary targets.

When making runs against the alien capital ships and their turrets, make sure to take advantage of the new auto-sliding feature. Auto-sliding not only lets you maintain direction and speed, it also lets you keep your sights set on your target while going around it, rather than making you attack head-on. —*Thierry Nguyen*

Strategy/Wargames

Great Battles of Hannibal

Don't use the missile capacity of your cavalry. You need its mobility and shock value to attack your opponent's flanks. If you use your missiles, your cavalry will freeze to reload at the worst possible time.

As the Carthaginians, you must break up the Roman Legion formations before they roll over your infantry. Skirmishers are extremely important in this regard. Charging elephants into the middle of a Legion and attacking the second row of Romans will often do the trick. A massed cavalry attack on the Roman flanks works as well, but watch your own flanks. If all else fails, defend in-depth with a staggered line, so that the Romans can't simultaneously bring their entire force to bear on your whole line. You probably can't defeat the Legions head to head, so you have to outmaneuver them.

Roman Legions have attack superiority against all other infantry (this is a significant advantage in the combat results calculation). Don't attack Legions except from the flank or the rear, and defend against Legions only when you have a terrain advantage. Otherwise trade space for time. If you are the Romans, use Group Attack as often as possible to maximize the impact of your legions.

Velites are used as skirmishers by Roman AI generals. However, they are classified as light infantry, which means that they count at full cost versus the army rout total. If you can rout or destroy most of these troops—and do the same to the weak Roman cavalry—you will be well on your way to victory.

—*Ron Talbot*

Action

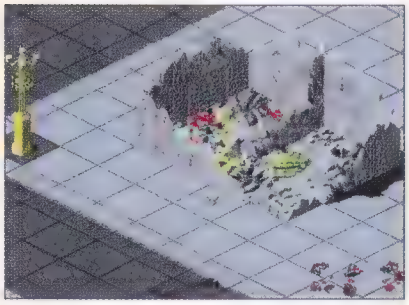
Tomb Raider II

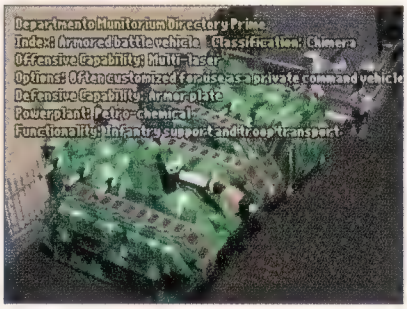
Having a hard time getting past the beginning of *40 Fathoms*? This is one of those puzzles that requires some fast thinking. We'll leave the rest of the level up to you, but here's how to get past the beginning:

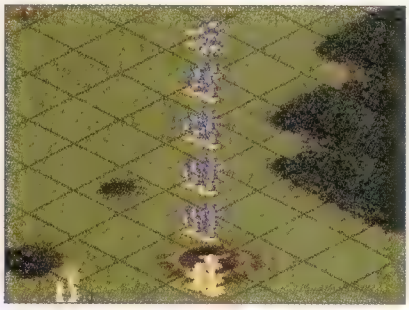
- As soon as the level begins, turn around and swim to the bottom, until you see some debris on the floor.
- Follow this trail of debris to the wrecked ship, and make sure to go for the open hold (where the anchor is near the back of the ship).
- Go into the hold, and make your way to the surface to take a breather. Now take care of the shark that's been hounding you all this time and go explore the rest of the level.

—*Thierry Nguyen*

Warhammer 40,000: Final Liberation




Department to Munitorium Directory Prime
Index: Armored battle vehicle Classification: Chimera
Offensive Capability: Multi-laser
Optimus: Often customized for use as private command vehicle
Defensive Capability: Armor plate
Powerplant: Petro-chemical
Functionality: Infantry support and troop transport



Bombard Platoons are the way to go when there's a target you simply must take out—a mere two shots wasted the building shown above. Plus, when a building blows up, *all* infantry in that building go down with it.

It's bad enough that Chimeras have poor armor. But, what's worse, Chimeras' guns are so bad that their shots will ping off even Ork armor—while the Chimeras die in the return fire. Leave them at home.

If you want to survive, think defensively. Specifically, entrench whenever you can, especially since it costs nothing to un-entrench when you are ready to move out.

—Samuel Baker II

Sports

Front Page Sports Football Pro '98

Even after you've installed the new patch (trust me, you need it!), there are a number of "features" in FPS '98 that you can take advantage of, particularly when you're on defense.

Oddly enough, with the newer ball physics, it's easier to knock a pass down at the line of scrimmage than in FPS Football '97. Even a defensive lineman with poor speed can wreak havoc on your opponent's passing game—particularly passes over the middle—provided that he has decent Agility and good Endurance.

When playing against a good roll-out quarterback, you can often get away with the Run Outside audible, especially on third-and-five or so.

The computer opponent in FPS '98 is better at picking up Mad Dog and other linebacker blitzes, so use those only as a change of pace. But if you take the time to design your own safety blitzes in tandem with a *fake* LB Blitz, you'll rack up tons of sacks, and your cornerbacks will feast on more weak, hurried tosses. — *Terry Coleman*

Courtside College Basketball

If your team doesn't look like a lock for the Final Four, there are a few tricks you can try in this old stat-based favorite from Lance Haffner.

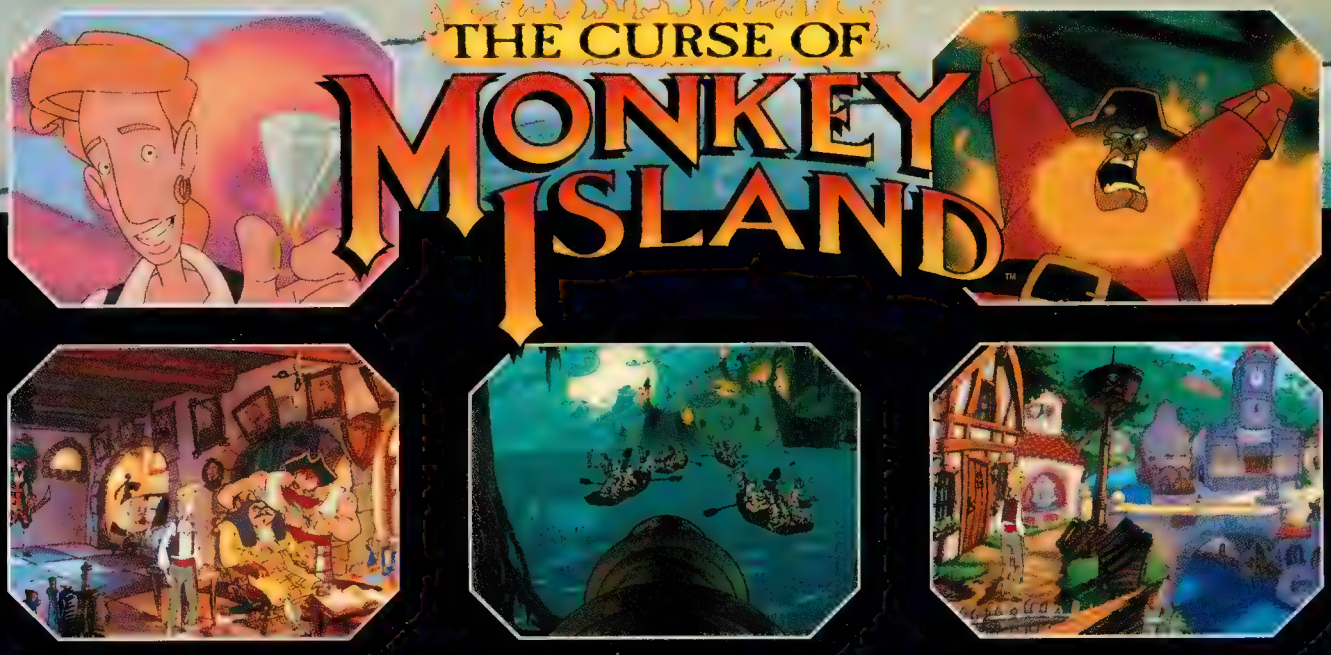
When setting up a game, always choose the "coach and select shots" option, with shooting percentages visible. This allows you to take shots outside of the normal offensive pattern—particularly helpful if you have a player who has trouble creating his own open shot, but who is adept at drawing fouls (think early Patrick Ewing at Georgetown).

Once you get key opposing players in foul trouble, put your free throw specialists in and work the clock. While this strategy obviously works best with a lead, it can help keep a weaker team from being blown out early—especially when you are playing at home and have the crowd behind you (a feature thoughtfully integrated into the game's design).

If you like to play at a fast pace, but your team has relatively low Fatigue ratings, don't despair. Play aggressively with your bench (Run & Jump Press works well against all but the best ball-handling teams), knowing that when one of your scrubs fouls out, other players will get a slight positive endurance boost to compensate.

Later versions of Courtside have an undocumented feature. Instead of hitting the #1 key to take a shot, try hitting the #4 key. If you are lucky, you'll be rewarded with a three-point attempt. **Warning:** this trey should be attempted only by really good shooters, or saved for when you're truly desperate. —*Terry Coleman*

Introducing the only pirate adventure that asks the question: What's sharper, your sword or your wit?



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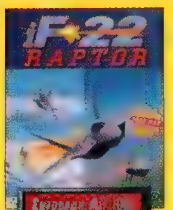

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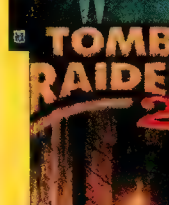

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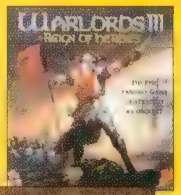

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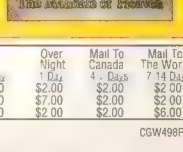

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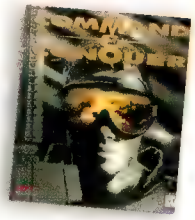
New Inductees!

Command & Conquer

Westwood Studios/Virgin, 1995



In the last two years, no gaming genre has risen to such huge prominence as real-time strategy games. Today, more and more companies are recognizing that real-time games deliver the combination of intense action and quick-thinking strategy that millions of gamers crave. None of this—the commercial and critical success of the genre, the number of devotees, the innovative gameplay—would have been possible if it weren't for Westwood Studios and its million-dollar success, COMMAND & CONQUER.

While DUNE II established the genre and developed a loyal following, COMMAND & CONQUER cemented the dominance of real-time strategy games. It's success was no aberration. It delivered great gameplay, innovative features (such as unit groupings) that are still copied, and multiplayer mayhem. With two different sides and a good multimedia storyline, Westwood succeeded in crafting a compelling single-player experience that was eminently replayable.

Gamers built bases, harvested ore, drafted massive armies, and warred against computer and human opponents in fast-thinking, intense games of mental and mouse agility. In 1995, that experience was nearly exclusive to COMMAND & CONQUER. Today, we have a huge field of more advanced real-time strategy games from which to choose, and we have Westwood's COMMAND & CONQUER to thank for it.

MechWarrior 2

Activision, 1995

As was the case with COMMAND & CONQUER, MECHWARRIOR 2 didn't create its genre, but you could say it legitimized it. MECHWARRIOR 2 established the idea of a giant robot "simulation." From its serious treatment of Mech design and resource management to its complex and addictive battles, MECHWARRIOR 2 set a benchmark that still stands today. Never before had a robot sim demonstrated enough detail and perceived realism to make a believable, completely engaging gaming experience. MECHWARRIOR 2's incredible realism was one of the things that led *CGW* to splinter "Space Simulations" from Simulations as a separate genre unto itself.

One of the game's pioneering elements was NetMech, which allowed Mech pilots to battle each other online at no charge. Even the designers had to be pleasantly surprised when scores of clans appeared online and began battling for their clan's honor. People even went so far as to go online and debate as to whether the performances of certain fictional weapons were accurate or not!

In an industry known for shooting-star titles that become obsolete in months, it's amazing that MECHWARRIOR 2 hasn't had a contender come close to upsetting it in the two years since its release. Only time will tell how long MECHWARRIOR 2 will reign supreme in the fighting robot sim arena, but one thing is certain—all future robot sims will be judged against the tremendous technical and commercial achievements of this Hall of Fame classic.

ALONE IN THE DARK (I-Motion, 1992)
Lovecraftian horror goes 3D, with shifting camera angles adding to the creepy atmosphere.

BATTLE CHESS (Interplay,1988)
The Franklin Mint of computer chess games with violent and funny animation disguising a solid chess engine.

BETRAYAL AT KRONDOR (Dynamix,1993)
As rich and imaginative as Raymond Feist's world itself; its 3D perspective was fresh.

CHESSMASTER (Software Toolworks, 1986)
The Cadillac of castling, this chess masterpiece gets better with each version

DUNGEON MASTER (FTL Software, 1987)
Trend-setting graphics, digitized stereo, and great hack-and-slash from a decade ago.

DAY OF THE TENTACLE (LucasArts, 1993)
Offbeat sequel to MANIAC MANSION; the interactive equivalent of a classic Chuck Jones cartoon.

DOOM (id Software, 1993)
Revolutionized PC action games and network gaming; surpassed in technology but not gameplay.

EARL WEAVER BASEBALL (EA,1986)
Revolutionary physics-based baseball game that pleased both action and statistics fans.

EMPIRE (Interstel, 1978)
WWII in space, this mainframe transplant brought elegant mechanics, depth, and unending replayability to the PC.

F-19 STEALTH FIGHTER (MicroProse,1988)
A "thinking man's" sim, with great missions, in which sneaking around is as fun as dogfighting.

FALCON 3.0 (Spectrum HoloByte, 1991)
Tough, detailed jet sim with ambitious AI, graphics, and connectivity to match its realism

FRONT PAGE SPORTS FOOTBALL PRO (Dynamix, '93)
Physics-based system, good AI, and unmatched career play make this the ultimate in pigskin play

GETTYSBURG: THE TURNING POINT (SSI, 1986)
First variable order of battle changed the look of all American Civil War games on the PC.

GUNSHIP (MICROPROSE, 1989)
Great character continuity, R&R for fatigued pilots, and even sick leave

HARPOON (360 Pacific, 1989)
In-depth modern naval battles in real-time, based on Cold War fears.

KAMPFGRUPPE (SSI, 1985)
Armored warfare on WWII's Eastern Front, offered engaging battles on multiple platforms

KING'S QUEST V (Sierra On-Line, 1990)
Redefined the graphic adventure with non-text-based parser and VGA graphics.

LEMMINGS (Psygnosis, 1991)
The lovable cartoon Lilliputians were real-time hits on every platform.

LINKS 386 PRO (Access Software, 1992)
Topped the leader board in graphics and realism.

M-1 TANK PLATOON (MicroProse, 1989)
Realistic sim that properly focused on armored formations rather than single vehicles; good mission designs

MASTER OF MAGIC (MICROPROSE, 1994)
The atmosphere and variety of MAGIC: THE GATHERING with the sophistication of CIVILIZATION.

MASTER OF ORION (MicroProse, 1993)
Remarkable diplomatic AI; deep and varied technology tree; aliens required radically different playing styles.

MECH BRIGADE (SSI, 1985)
Modern armored battles with improved KAMPFGRUPPE system and more realism.

MIGHT & MAGIC (New World Computing, 1986)
First-person, maze-based RPG with huge environment and tough tactical combat.

M.U.L.E. (EA, 1983)
A landmark multiplayer strategy game that had no weapons of destruction, just cutthroat competition that made economics fun.

PANZER GENERAL (SSI, 1994)
A truly fun wargame with an elegant interface, great campaigns, strong AI, good graphics, and impressive sound.

RED BARON (Dynamix, 1990)
WWI air combat with great graphics, incredible realism, and a versatile replay feature.

SID MEIER'S CIVILIZATION (MicroProse, 1991)
CGW's #1-rated game of all time; indescribably addictive world conquest/ exploration game.

SID MEIER'S PIRATES (MicroProse, 1987)
Combines pirate adventure, action, RPG, and strategy to make the most successful hybrid of all time

SID MEIER'S RAILROAD TYCOON (MicroProse, '90)
SimCity meets 1830 with robber barons for emphasis.

SIMCITY (Maxis, 1987)
Urban planning with fascinating consequences and challenges; the first great software toy.

STARFLIGHT (EA, 1986)
Depth, great characters, and a good sci-fi storyline set early standards for RPGs.

THE BARD'S TALE (EA, 1985)
Pioneered three-point animation, 3D color mazes, and automapping.

THE SECRET OF MONKEY ISLAND (LucasArts, '90)
Comedy adventure that set new standards in writing quality and social sensitivity.

THEIR FINEST HOUR (LucasArts, 1989)
WWII sim with great campaigns and crew member options some current sims lack.

TIE FIGHTER (LucasArts, 1994)
Most satisfying *Star Wars* space-combat game to date lets you live on the dark side.

ULTIMA III (Origin Systems, 1983)
Coherency and surprising subtlety emphasized role-playing, and set the tone for later ULTIMAS.

ULTIMA IV (Origin Systems, 1985)
High-concept RPG explored meaning of virtue and put the ROLE in role-playing

ULTIMA VI (Origin Systems, 1990)
This RPG as morality play paved way for ULTIMA ONLINE's realistic environs and objects.

ULTIMA UNDERWORLD (Origin Systems, 1992)
The first truly 3D RPG, and still the most convincing; its dungeon walls were nicely "painted" with texture-mapped graphics.

WAR IN RUSSIA (SSI, 1984)
More realistic than EASTERN FRONT, it captured the essence of the largest land campaign in history.

WASTELAND (Interplay, 1986)
Derived from Mike Stackpole's *Mercenaries, Spies, and Private Eyes*, this is the definitive postapocalyptic RPG.

WING COMMANDER I (Origin Systems, 1990)
A hot spaceflight engine, unfolding story path, and great characters.

WING COMMANDER II (Origin Systems, 1991)
Darker story, grittier feel, sound card advances, and tougher AI made this a sequel of sequels.

WING COMMANDER III (Origin Systems, 1994)
Surprisingly satisfying FMV space opera didn't lose the essence of the space-combat game.

WIZARDRY (Sir-Tech Software, 1981)
Defined the computer RPG with maze-based viewpoint and atmospheric spell names.

WOLFENSTEIN 3-D (id Software, 1992)
Smooth scrolling action blastfest cleverly updated the original, and put shareware back on the map.

X-COM (MicroProse, 1994)
Premier tactical squad-level engine combined with alien tech research and pop culture.

ZORK (Infocom, 1981)
The progenitor of adventure games on the PC; its humor and challenging puzzles seem timeless.

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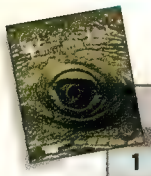
A MONTHLY SURVEY OF *CGW* SUBSCRIBERS

Each month, 2,000 *CGW* subscribers are selected at random to rate 100 computer games. The results of that poll are combined with the results of previous months to yield a cumulative average for the best plays in gaming. If you receive a ballot, please return it with your ratings so that other gamers and game publishers can benefit from your feedback.



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1	Quake Pack 2: Dissolution of Eternity	id Software/Rogue	8.92
2	Quake Pack 1: Scourge of Armagon	id Software/Ritual	8.84
3	Jedi Knight: Dark Forces II	LucasArts	8.52
4	Duke Nukem 3D	3D Realms	8.24
5	Tomb Raider	Eidos	8.21
6	Quake	id Software	8.02
7	The Need for Speed SE	EA	7.91
8	Moto Racer	EA	7.80
9	Crusader: No Regret	EA/Origin	7.69
10	Interstate '76	Activision	7.41

TOP ADVENTURE GAMES

	GAME	COMPANY	SCORE
1	Gabriel Knight 2	Sierra	8.20
	The Pandora Directive	Access	8.20
3	Riven	Red Orb	7.82
4	Twinsen's Odyssey	Activision	7.80
5	The Curse of Monkey Island	LucasArts	7.71
	RAMA	Sierra	7.71
7	The Neverhood	DreamWorks	7.64
	Realms of the Haunting	Interplay	7.64
9	Circle of Blood	Virgin	7.53
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1	You Don't Know Jack 2	Berkeley Systems	8.51
2	You Don't Know Jack	Berkeley Systems	8.20
3	You Don't Know Jack Movies	Berkeley Systems	8.07
4	You Don't Know Jack Sports	Berkeley Systems	7.70
5	Power Chess	Sierra	7.30
6	Lose Your Marbles	SegaSoft	6.58
7	—		
8	—		
9	—		
10	—		

TOP SIMULATION/SPACE COMBAT GAMES

	GAME	COMPANY	SCORE
1	Wing Commander IV	EA/Origin	8.28
2	AH-64 Longbow	EA/Origin	8.08
3	MechWarrior 2: Mercenaries	Activision	7.95
4	Silent Hunter	SSI	7.85
5	U.S. Marine Fighters	EA	7.80
6	EF2000	Ocean	7.60
7	U.S. Navy Fighters	EA	7.50
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9	Advanced Tactical Fighters	EA	7.38
10	X-Wing vs. TIE Fighter	LucasArts	7.29

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5	NBA Live 97	EA Sports	7.94
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	GAME	COMPANY	SCORE
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4	WarCraft II	Blizzard	8.72
5	Heroes II	New World Computing	8.71
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9	C&C: Covert Operations	Virgin/Westwood	8.18
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1	Diablo	Blizzard	8.64
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	GAME	COMPANY	SCORE
1	Steel Panthers II Campaign Disk	SSI	8.70
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★	1	Heroes II: Price of Loyalty	New World Computing	ST	9.07
★	2	Quake Pack 2: Dissolution of Eternity	id Software/Rogue	AC	8.92
	3	Quake Pack 1: Scourge of Armagon	id Software/Ritual	AC	8.84
		WarCraft II Expansion Disk	Blizzard	ST	8.84
	5	Total Annihilation	GT Interactive	ST	8.79
	6	WarCraft II	Blizzard	ST	8.72
	7	Civilization II	MicroProse	ST	8.71
		Heroes II	New World Computing	ST	8.71
★	9	Steel Panthers II Campaign Disk	SSI	WG	8.70
	10	Red Alert	Virgin/Westwood	ST	8.68
★	11	Diablo	Blizzard	RP	8.64
★	12	Links LS	Access	SP	8.63
	13	Steel Panthers Campaign Disk	SSI	WG	8.61
	14	Panzer General II	SSI	WG	8.59
	15	Jedi Knight: Dark Forces II	LucasArts	AC	8.52
★	16	You Don't Know Jack 2	Berkeley Systems	CP	8.51
	17	Red Alert: Counterstrike	Virgin/Westwood	ST	8.39
	18	Steel Panthers II	SSI	WG	8.31
	19	Sid Meier's Gettysburg	Firaxis	WG	8.29
★	20	Wing Commander IV	EA/Origin	SI	8.28
	21	Duke Nukem 3D	3D Realms	AC	8.24
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		Twinsen's Odyssey	Activision	AD	7.80
		U.S. Marine Fighters	EA	SI	7.80
	48	Tripleplay 98	EA Sports	SP	7.74
	49	The Curse of Monkey Island	LucasArts	AD	7.71
		Rama	Sierra	AD	7.71
	51	Battleground: Waterloo	TalonSoft	WG	7.70
		Jack Nicklaus 4	Accolade	SP	7.70
		You Don't Know Jack Sports	Berkeley Systems	CP	7.70
	54	Crusader: No Regret	EA/Origin	AC	7.69
	55	The Neverhood	DreamWorks	AD	7.64
		Realms of the Haunting	Interplay	AD	7.64
	57	Dungeon Keeper	EA/Bullfrog	ST	7.60
		EF2000	Ocean	SI	7.60
		Jagged Alliance: Deadly Games	Sir-Tech	ST	7.60
	60	Circle of Blood	Virgin	AD	7.53
	61	Battleground: Gettysburg	TalonSoft	WG	7.50
		U.S. Navy Fighters	EA	SI	7.50
	63	X-COM 3	MicroProse	ST	7.46
	64	Spycraft	Activision	AD	7.44
	65	Tripleplay 97	EA Sports	SP	7.43
	66	Flight Simulator 98	Microsoft	SI	7.41
		Interstate '76	Activision	AC	7.41
		MDK	Playmates/Shiny	AC	7.41
		Last Express	Broderbund	AD	7.41
	70	Age of Rifles Campaign Disk	SSI	WG	7.40
	71	CivNet	MicroProse	ST	7.39
	72	Advanced Tactical Fighters	EA	SI	7.38
		NBA Live 96	EA Sports	SP	7.38
	74	Fantasy General	SSI	ST	7.36
	75	Imperialism	SSI	ST	7.35
		Lords of the Realm II	Sierra	ST	7.35
	77	FPS Football Pro '96	Sierra	SP	7.34
	78	PGA Tour Pro	EA Sports	SP	7.33
	79	Daggerfall	Bethesda	RP	7.32
	80	Myth: The Fallen Lords	Bungie	ST	7.31
	81	Power Chess	Sierra	CP	7.30
	82	688(I) Hunter/Killer	EA/Jane's	SI	7.29
		Dark Reign	Activision	ST	7.29
		X-Wing vs. TIE Fighter	LucasArts	SI	7.29
	85	FPS Football Pro '97	Sierra	SP	7.27
		Leisure Suit Larry 7	Sierra	AD	7.27
	87	Robert E. Lee: Civil War General	Sierra	WG	7.26
	88	Hexen II	Activision	AC	7.25
	89	Comanche 3	NovaLogic	SI	7.24
		Shadows of the Empire	LucasArts	AC	7.24
	91	FIFA 97	EA Sports	SP	7.21
	92	Theme Hospital	EA/Bullfrog	ST	7.18
	93	Virtual Pool	VR Sports	SP	7.17
		Zork Nemesis	Activision	AD	7.17
	95	Novalogic F-22	Novalogic	SI	7.15
	96	Magic the Gathering	MicroProse	ST	7.14
	97	Descent II	Interplay	AC	7.12
		Flying Corps	Empire	SI	7.12
	99	Lands of Lore II	Westwood	RP	7.10
	100	Anvil of Dawn	New World Computing	RP	7.09

Games on unnumbered lines are tied with game on line above. ★ = Top game of type. Red = New Game, AD = Adventure, RP = Role-Playing, SI = Simulation/Space Combat, ST = Strategy, WG = Wargame, AC = Action, SP = Sports, CP = Classic/Puzzle. Games are retired after two years and become eligible for the Hall of Fame.

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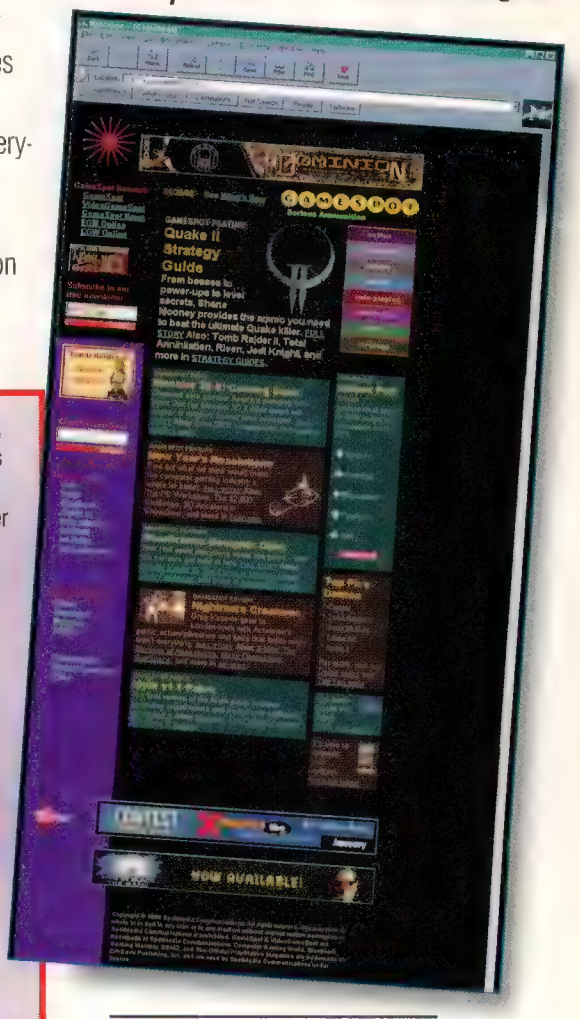

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Demos

GameSpot has the most thorough and regularly updated game demo libraries on the Web. Here are demos you'll find to some of the games reviewed in this issue: LORDS OF MAGIC, SUB CULTURE, WING COMMANDER PROPHECY, STEEL PANTHERS III, WORMS 2, and more!

Designer Diaries

Ever wonder what's going on behind the scenes while those much-anticipated games are in development? *GameSpot*'s Designer Diaries follow the progress of game designers such as Jane Jensen, who is embarking on her third GABRIEL KNIGHT game for Sierra On-Line, and Tim Schafer, who is working on GRIM FANDANGO for LucasArts. Ion Storm's Tom Hall also gives *GameSpot* readers regular updates on ANACHRONOX. And, just added: ACTIVISION'S BATTLEZONE!

What's the Deal With... The Death of FMV?

Despite the emergency cardiac stimulation that will be provided to FMV by the shiny new DVD drives in our computers, I think it's pretty safe to say that we are nearing the last days of Full Motion Video as a viable gaming medium. While this is hardly news, it's important to take a moment and reflect on why FMV failed.

On the surface, it seemed like a nice extension of the whole adventure game concept. I mean, after all, wasn't the whole "move your guy around the screen and click on hotspots" motif just dying for real actors instead of sprites? Funny enough, the answer was "no," but the reasons for that are a little more subtle than most designers are willing to admit. People tend to choose the worst of the form to justify the premise that the whole concept is a waste of money.

Ol' Ken Williams had no trouble last year claiming that FMV was just not working out for Sierra. Of course this was something of a red herring, because what wasn't working for Sierra was the writing in its games, not the medium. Here's a news flash: There is one excellent horror writer under Ken's command at Sierra, and she *doesn't* share the same last name as Sierra's former CEO. PHANTASMAGORIA would still have been a little weak, and PHANTASMAGORIA 2 would still have been juvenile porno-horror tripe even if they had been using a networkable holographic imaging system with a thumbs-up from God. On the other hand, GABRIEL KNIGHTS 1 & 2 were equally brilliant, one in FMV and one in the traditional format.

No, the real weakness of FMV runs deep into the current standard of adventure games, which is why these games lent themselves so well to video. It's all about freedom—and the lack thereof.

> **"All FMV does is reduce your gaming rig to a very expensive and precise VCR."**

Remember back in the prehistory of computer gaming? Back when CRYSTAL CAVERNS and ZORK were almost the only games in town? Now, as limited and basic as those games could be at times, they did strive to create the illusion that the player was in control. Sooner or later you came to realize that the Caverns weren't all that expansive, or that the computer had no idea what "Smash guy with painting of king" meant; but the lack of freedom wasn't constantly pushed into your face, as it is with FMV.

When adventure gaming went graphical, you knew in your heart of hearts that your options had been cut down a bit, because nobody had the time to animate all the dumb things you wanted to do. But the sheer thrill of actually seeing what everything looked like—and of actually hearing the dialogue—more than made up for the lack of control, at least initially. Unfortunately, the same can't be said for FMV. While it is kind of cool to watch real people act when you click the mouse, it's just not enough to cover up how narrow your gaming universe has become.

The problem is that we can't help but know that they haven't filmed the equivalent of three or four movies so we can stick our hero's arm in the toilet, just for the hell of it. Any sense of exploring a virtual world is replaced by simply casting about for a limited number of hotspots and seeing what two or three possibilities have actually been filmed. Video just cannot provide the freedom that coded graphics can (and do) provide. And, in reality, all FMV does is reduce your gaming rig to a very expensive and precise VCR.

I would think that we'll be seeing the evolution of full-3D simulated adventure environments (like those found in DARK EARTH and BLADE RUNNER) long after the bottom drops out of the blue screen market.

Real fans of FMV shouldn't throw themselves on their swords quite yet, of course; some great titles will probably always be made, such as TEX MURPHY or the WING COMMANDER installments, not to mention excellent experiments like PSYCHIC DETECTIVE.

The final nail in the coffin of FMV for me personally was watching a demo for Interplay's new *Star Trek* game, VULCAN FURY. Seeing those beautifully rendered graphic versions of Kirk, Spock, and the gang in their prime, jockeying around in that classic *Enterprise*, I thought, "This is what I want! Not old guys with girdles (or even worse, newfangled, limp-wristed *Next Generation* characters), but the old characters I knew and loved—just in new adventures." Time can't harm a good sprite.

That's the real trouble with FMV: Reality often bites, and computer games can be so much more. Why hobble games with aging actors, expensive sets that still look shoddy, and not much more freedom than you can find with a VCR remote? I hope FMV will remain an interesting footnote in gaming, somewhat akin to all those funky things the French were doing with film in the late 1800s, which were interesting but just never caught on. I also hope that all that Hollywood money can start going into advanced graphics, better writing, and voice actors who can really act.

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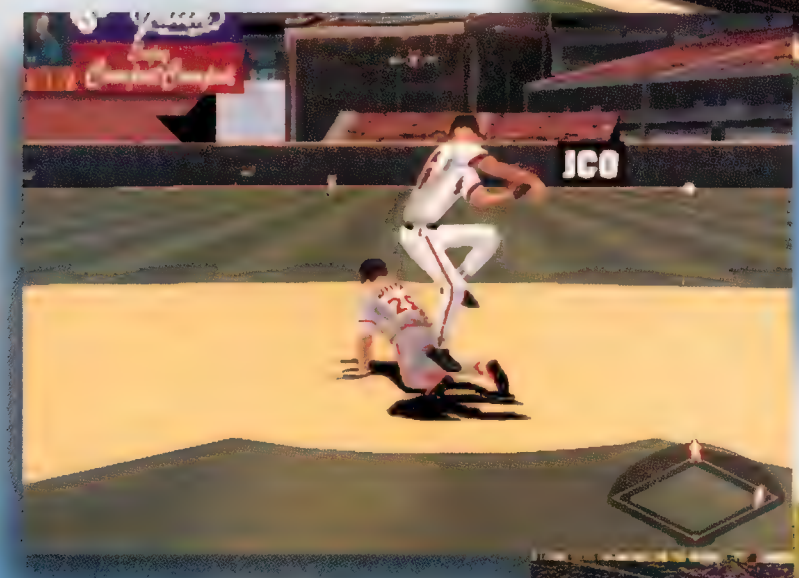

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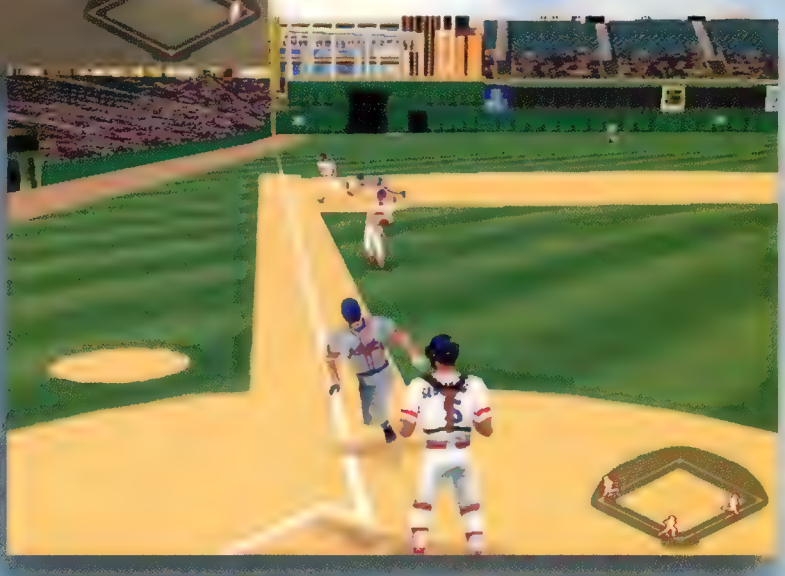

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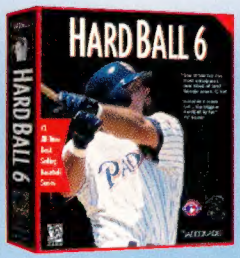

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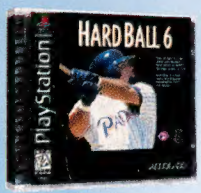

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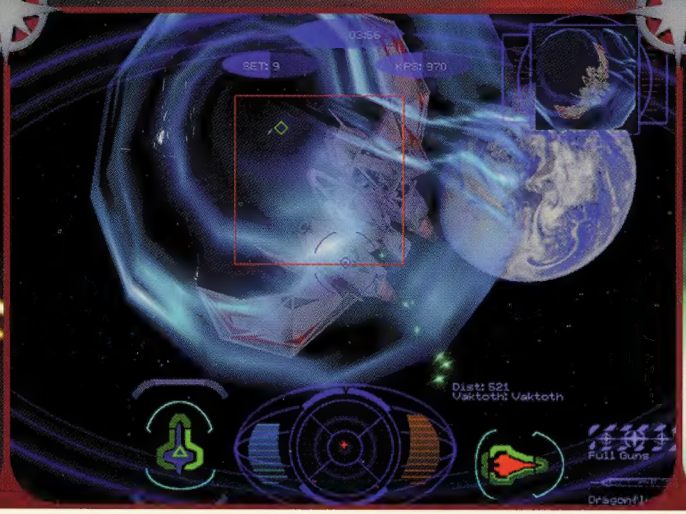

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